

# TECHNICAL MEMORANDUM



## STARKIST SAMOA EFFLUENT PRIORITY POLLUTANT ANALYSIS – SEPTEMBER 2004 SAMPLING

Prepared For: StarKist Samoa

Prepared By: Karen Glatzel  
Steve Costa

Date: 22 December 2004

Distribution: Carl Goldstein  
United States Environmental Protection Agency, Region 9  
Peter Peshut  
American Samoa Environmental Protection Agency

### **Purpose**

This memorandum presents the results of the effluent priority pollutant analysis conducted for StarKist Samoa. The effluent sampling and analysis is required under StarKist Samoa's NPDES Permit (No. AS 0000019). The analyses were conducted using a 24-hr composite effluent sample collected in September 2004.

### **Background**

StarKist Samoa must monitor treated wastewater effluent as required in its NPDES Permit, Section D. The effluent monitoring results presented in this Technical Memorandum meet the requirements of NPDES Permit Section D.2 (Priority Pollutant Scan), which is stated as follows:

*The permittee shall conduct at least one priority pollutant scan of the effluent. This test shall be conducted prior to the application for renewal of the permit. Should the toxicity tests[Section D.1] indicate that the discharge causes, has a reasonable potential to cause, or contributes to non-compliance with American Samoa Water Quality Standards, ASEPA and/or USEPA may require full or partial priority pollutant scans be conducted concurrent with the required semi-annual bioassay tests.*

### ***Sampling Location***

The effluent sampling location is the same as used when StarKist Samoa is sampling effluent for other tests such as the semi-annual bioassay sampling and routine discharge monitoring. It is located just downstream of the Parschal flume, prior to discharge into the joint cannery outfall.

### ***Effluent Sampling Methods***

Between 0900 on 22 September 2004 and 0600 on 23 September 2004, a 24-hour flow-weighted composite sample of final effluent was collected from the StarKist Samoa effluent discharge. Individual grab samples were collected from the permit established effluent sampling site. Detailed sampling procedures are described in the previously established SOP for cannery effluent sampling for toxicity and chemistry testing.

A total of eight grab samples were collected at three-hour intervals over a 24-hour period. At each sampling time samples were collected into two 1-gallon brown glass bottles. The samples were stored on ice, or in a refrigerator, until completion of the 24-hour sampling period. After all samples were collected a flow-proportioned composite sample was prepared. The grab sample collection times, effluent flow rates, and the relative effluent flow volumes calculated from plant flow records are summarized in Table 1. The relative effluent flow volumes were used to prepare the final composite sample, which was used to fill the various sample containers shipped to the laboratory for testing.

The sample containers were packed on ice, in an ice chest, for shipment to the laboratory. A chain-of-custody form for the sample was completed and sealed into a zip-lock bag and taped inside the lid of the ice chest. The sample was shipped via DHL to the testing laboratory. The chain-of-custody form and the DHL waybill are provided in Attachment I.

### ***Effluent Sampling Results***

The results of the effluent sample analysis for priority pollutants are given in Tables 2 through 6. Table 7 provides the data qualifiers for this data set. Detailed laboratory analytical results are provided in Attachment II. Results are presented in terms of the data types: general inorganics and nutrients, metals, organochlorine pesticides and PCB's, volatiles, and semi-volatiles, in Tables 2 through 6, respectively.

### ***Inorganics and Nutrients***

With the exception of cyanide there were detected values reported for all constituents in the general category (Table 2). Nutrients included nitrogen (TKN), ammonia, and phosphorus, with reported concentrations that are in the typical range for the cannery effluent.

### ***Metals***

The effluent sample results for metals indicates that seven metals were detected as present, aluminum, barium, boron, cadmium, iron, manganese, mercury, and zinc (Table 3). Four other metals, antimony, arsenic, selenium, and titanium, were estimated (designated as B) between the method reporting limit (MRL) and the method detection limit (MDL).

### ***Organochlorine Pesticides and PCB's***

The effluent sample test results indicate two constituents in this category were detected, but at estimated concentrations, Endosulfan I and 4-4'DDE (Table 4). Both of these constituents were estimated to be at concentrations that were extremely low. All other constituents in this category were reported as not detected.

### ***Volatile Organics and Semi-Volatile Organics***

Volatile organics analysis of the effluent sample indicated that one constituent, toluene, was present at 29 µg/l (Table 5). Two other constituents were detected but at estimated concentrations, benzene and ethylbenzene. Benzene was estimated to be at the MDL. Ethylbenzene was estimated to be above the MDL but lower than the MRL.

Semi-volatile analysis results (Table 6) for the effluent sample resulted in one constituent being detected as present, bis(2-ethylhexyl) phthalate and five other constituents were detected but at estimated concentrations. Estimated concentrations were typically very low and closer to the MDL than the MRL.

StarKist Samoa Effluent Priority Pollutant Analysis  
September 2004 Sampling

---

**Table 1.**  
**StarKist Samoa Effluent Composite Worksheet**  
**for NPDES Priority Pollutant Chemistry Samples**  
**22 Sept 2004 to 23 Sept 2004**

Grab Sample No.	Sample Collection Time		Flow GPM	(C)	(D)	Volume of sample (ml)				
				Flow MGD	Fraction of Total Flow	(note: 1 gallon = 3780 ml)				
	(A)	(B)				(E)	(F)	(G)	(H)	(I)
	Date	Time				3780	1000	500	250	100
1	9/22/2004	9:00 AM	1093	1.57392	0.0856	323	86	43	21.4	8.6
2	9/22/2004	12:00	1298	1.86912	0.1016	384	102	51	25.4	10.2
3	9/22/2004	15:00	1618	2.32992	0.1266	479	127	63	31.7	12.7
4	9/22/2004	18:00	1813	2.61072	0.1419	536	142	71	35.5	14.2
5	9/22/2004	21:00	1720	2.4768	0.1346	509	135	67	33.7	13.5
6	9/23/2004	12:00 AM	1823	2.62512	0.1427	539	143	71	35.7	14.3
7	9/23/2004	3:00	1821	2.62224	0.1425	539	143	71	35.6	14.3
8	9/23/2004	6:00	1590	2.28960	0.1245	470	124	62	31.1	12.4
	<b>Totals:</b>			18.39744	1.0000	3780	1000	500	250	100

StarKist Samoa Effluent Priority Pollutant Analysis  
September 2004 Sampling

---

**Table 2.**  
**StarKist Samoa Effluent Priority Pollutant General Constituents Analysis**  
**September 2004**

Constituent	Result	Result Notes (see Table 7)	Units	Dilution Factor	Method Reporting Limit	Method Detection Limit	Extraction Method	Analysis Method
Bromide	21.1=			100	20	6		300.0
Sulfate	933=			500	100	45		300.0
Cyanide	0.003 U			1	0.01	0.003		335.2
Chemical Oxygen Demand	1400=			2	100	100		410.1
MBAS	0.07=			1	0.05	0.03		426.1
Solids, Total Suspended	62=			1	5	5		160.2
Phenolics, Total	0.32=			1	0.01	0.003	N/A	420.1
Carbon, Total Organic	214=		mg/l	50	25	3.5		415.1
Sulfite	55=			1	2	0.3		377.1
Sulfide, Total	4.87=			4	0.2	0.024		376.2
Ammonia as Nitrogen	37.6=			25	1.3	0.75		350.1
Nitrogen, Total Kjeldahl (TKN)	64.1=			25	3.0	1.75		351.4
Phosphorus, Total	11.6=			25	0.3	0.075		365.3
Oil and Grease, Total	8=			1	5.0	0.64		1664

StarKist Samoa Effluent Priority Pollutant Analysis  
September 2004 Sampling

---

**Table 3.**  
**StarKist Samoa Effluent Priority Pollutant Metals Analysis**  
**September 2004**

Constituent	Result	Result Notes (see Table 7)	Units	Dilution Factor	Method Reporting Limit	Method Detection Limit	Extraction Method	Analysis Method
Aluminum	918=			1	50	40		6010B
Antimony	44.5B			1	50	40		6010B
Arsenic	17.5B			5	25.0	5.0		7060A
Barium	5.5=			1	5.0	2.0		6010B
Beryllium	0.4 U			1	5.0	0.4		6010B
Boron	1820=			1	50	20		6010B
Cadmium	8.6=			1	5.0	5.0		6010B
Chromium	3.0 U			1	5.0	3.0		6010B
Cobalt	5.0 U			1	10.0	5.0		6010B
Copper	4.0 U			1	10.0	4.0		6010B
Iron	321=		mg/l	1	20.0	20.0	N/A	6010B
Lead	2.0 U			2	4.0	2.0		7421
Manganese	22.0=			1	5.0	2.0		6010B
Mercury	0.27=			1	0.20	0.04		7470A
Molybdenum	9.0 U			1	10.0	9.0		6010B
Nickel	20 U			1	20	20		6010B
Selenium	5.6B			5	25.0	5.0		7740
Silver	5.0 U			1	10.0	5.0		6010B
Thallium	5.0 U			5	25.0	5.0		7841
Tin	50 U			1	50	50		6010B
Titanium	6.1B			1	10.0	2.0		6010B
Zinc	260=			1	10.0	2.0		6010B

StarKist Samoa Effluent Priority Pollutant Analysis  
September 2004 Sampling

**Table 4.**  
**StarKist Samoa Effluent Priority Pollutant**  
**Organochlorine Pesticides and Polychlorinated Biphenyls Analysis**  
**September 2004**

Constituent	Result	Result Notes (see Table 7)	Units	Dilution Factor	Method Reporting Limit	Method Detection Limit	Extraction Method	Analysis Method
alpha-BHC	0.052	U, i	µg/l	5	0.052	0.052	EPA 3520C	608M
beta-BHC	0.013	U		5	0.052	0.013		
gamma-BHC (Lindane)	0.052	U, i		5	0.052	0.052		
delta-BHC	0.0072	U		5	0.052	0.0072		
Heptachlor	0.015	U, i		5	0.052	0.015		
Aldrin	0.052	U, i		5	0.052	0.052		
Heptachlor Epoxide	0.0045	U		5	0.052	0.0045		
Endosulfan I	0.0074	J,P,D		5	0.052	0.0031		
Dieldrin	0.0035	U		5	0.052	0.0035		
4,4'-DDE	0.012	J,P,D		5	0.052	0.0041		
Endrin	0.0072	U		5	0.052	0.0072		
Endosulfan II	0.0097	U		5	0.052	0.0097		
4,4'-DDD	0.0041	U		5	0.052	0.0041		
Endrin Aldehyde	0.0062	U		5	0.052	0.0062		
Endosulfan Sulfate	0.0073	U		5	0.052	0.0073		
4,4'-DDT	0.013	U		5	0.052	0.013		
Toxaphene	0.92	U		5	5.2	0.92		
Chlordane	0.29	U		5	5.2	0.29		
Aroclor 1016	0.11	U		1	1.1	0.11		
Aroclor	0.066	U		1	1.1	0.066		
Aroclor 1232	0.044	U		1	1.1	0.044		
Aroclor 1242	0.086	U		1	1.1	0.086		
Aroclor 1248	0.018	U		1	1.1	0.018		
Aroclor 1254	0.0086	U		1	1.1	0.0086		
Aroclor 1260	0.022	U		1	1.1	0.022		

StarKist Samoa Effluent Priority Pollutant Analysis  
September 2004 Sampling

**Table 5.**  
**StarKist Samoa Effluent Priority Pollutant**  
**Volatile Organic Analysis**  
**September 2004.**

Constituent	Result	Result Notes (see Table 7)	Units	Dilution Factor	Method Reporting Limit	Method Detection Limit	Extraction Method	Analysis Method
Chloromethane	0.31	U			5.0	0.31		
Vinyl Chloride	0.58	U			5.0	0.58		
Bromomethane	0.81	U			5.0	0.81		
Chloroethane	0.46	U			5.0	0.46		
Trichlorofluoromethane (CFC 11)	0.49	U			5.0	0.49		
1,1-Dichloroethene (1,1-DCE)	0.48	U			5.0	0.48		
Dichloromethane (Methylene Chloride)	0.21	U			5.0	0.21		
trans-1,2-Dichloroethene	0.19	U			5.0	0.19		
1,1-Dichloroethane (1,1-DCA)	0.34	U			5.0	0.34		
Chloroform	0.21	U			5.0	0.21		
1,1,1-Trichloroethane (TCA)	0.45	U			5.0	0.45		
Carbon Tetrachloride	0.38	U			5.0	0.38		
Benzene	0.27J				5.0	0.27		
1,2-Dichloroethane (EDC)	0.12	U			5.0	0.12		
Trichloroethene (TCE)	0.46	U			5.0	0.46		
1,2-Dichloropropane	0.19	U			5.0	0.19		
Bromodichloromethane	0.17	U	µg/l	1	5.0	0.17	none	624
2-Chloroethyl Vinyl Ether	0.62	U			10.0	0.62		
trans-1,3-Dichloropropene	0.17	U			5.0	0.17		
Toluene	29=				5.0	0.25		
cis-1,3-Dichloropropene	0.17	U			5.0	0.17		
1,1,2-Trichloroethane	0.21	U			5.0	0.21		
Tetrachloroethene (PCE)	0.43	U			5.0	0.43		
Dibromochloromethane	0.15	U			5.0	0.15		
Chlorobenzene	0.18	U			5.0	0.18		
Ethylbenzene	1.6J				5.0	0.33		
Bromoform	0.28	U			5.0	0.28		
1,1,2,2-Tetrachloroethane	0.25	U			5.0	0.25		
1,3-Dichlorobenzene	0.17	U			5.0	0.17		
1,4-Dichlorobenzene	0.17	U			5.0	0.17		
1,2-Dichlorobenzene	0.19	U			5.0	0.19		
Acrolein	4.3	U			50	4.3		
Acrylonitrile	0.45	U			10	0.45		

StarKist Samoa Effluent Priority Pollutant Analysis  
September 2004 Sampling

---

**Table 6.**  
**StarKist Samoa Effluent Priority Pollutant**  
**Semi-Volatile Analysis, September 2004**

Constituent	Result	Result Notes (see Table 7)	Units	Dilution Factor Method Reporting Limit	Method Detection Limit	Extraction Method	Analysis Method
N-Nitrosodimethylamine	1.49	U		26	1.49		
Bis(2-chloroethyl) Ether	0.34	U		11	0.34		
Phenol	300D			52	1.7		
2-Chlorophenol	0.32	U		11	0.32		
1,3-Dichlorobenzene	0.36	U		11	0.36		
1,4-Dichlorobenzene	0.33	U		11	0.33		
1,2-Dichlorobenzene	0.44	U		11	0.44		
Bis(2-chloroisopropyl) Ether	0.32	U		11	0.32		
Hexachloroethane	0.30	U		11	0.30		
N-Nitrosodi-n-propylamine	0.51	U		11	0.51		
Nitrobenzene	0.58	U		11	0.58		
Isophorone	0.26	U		11	0.26		
2-Nitrophenol	0.39	U		11	0.39		
2,4-Dimethylphenol	0.27	U		11	0.27		
Bis(2-chloroethoxy)methane	0.29	U	µg/l	1	11	0.29	3520C
2,4-Dichlorophenol	0.31	U		11	0.31		
1,2,4-Trichlorobenzene	0.37	U		11	0.37		
Naphthalene	3.6J			11	0.38		
Hexachlorobutadiene	0.30	U		11	0.30		
4-Chloro-3-methylphenol	0.50	U		11	0.50		
Hexachlorocyclopentadiene	1.3	U		11	1.3		
2,4,6-Trichlorophenol	0.21	U		11	0.21		
2-Chloronaphthalene	0.30	U		11	0.30		
Acenaphthylene	0.25	U		11	0.25		
Dimethyl Phthalate	0.26	U		11	0.26		
2,6-Dinitrotoluene	0.36	U		11	0.36		
Acenaphthene	0.29	U		11	0.29		
2,4-Dinitrophenol	2.3	U		26	2.3		
4-Nitrophenol	2.0	U		26	2.0		

StarKist Samoa Effluent Priority Pollutant Analysis  
September 2004 Sampling

---

**Table 6 (continued).**  
**StarKist Samoa Effluent Priority Pollutant**  
**Semi-Volatile Analysis, September 2004**

Constituent	Result	Result Notes (see Table 7)	Units	Dilution Factor Method Reporting Limit	Method Detection Limit	Extraction Method	Analysis Method
2,4-Dinitrotoluene	0.28	U		11	0.28		
Fluorene		1.3J		11	0.33		
4-Chlorophenyl Phenyl Ether	0.29	U		11	0.29		
Diethyl Phthalate	0.30	U		11	0.30		
4,6-Dinitro-2-methylphenol	2.2	C C		26	2.2		
N-Nitrosodiphenylamine	0.54	U		11	0.54		
1,2-Diphenylhydrazine	0.52	U		11	0.52		
4-Bromophenyl Phenyl Ether	0.28	U		11	0.28		
Hexachlorobenzene	0.65	U		11	0.65		
Pentachlorophenol (PCP)	2.5	U		26	2.5		
Phenanthrene		1.8J		11	0.50		
Anthracene	0.63	U		11	0.63		
Di-n-butyl Phthalate		0.58J		11	0.38		
Fluoranthene	0.67	U	µg/l	1	11 0.67	3520C	625
Benzidine	9.0	U		52	9.0		
Pyrene	0.75	U		11	0.75		
Butyl Benzyl Phthalate	0.48	U		11	0.48		
3,3'-Dichlorobenzidine	0.28	U		26	0.28		
Benz(a)anthracene	0.61	U		11	0.61		
Chrysene	0.81	U		11	0.81		
Bis(2-ethylhexyl) Phthalate	14H			11	2.0		
Di-n-octyl Phthalate	0.64	U		11	0.64		
Benzo(b)fluoranthene	0.60	U		11	0.60		
Benzo(k)fluoranthene	0.85	C U		11	0.85		
Benzo(a)pyrene	0.67	U		11	0.67		
Indeno(1,2,3-cd)pyrene	0.70	U		11	0.70		
Dibenz(a,h)anthracene	0.77	U		11	0.77		
Benzo(g,h,i)perylene	0.83	U		11	0.83		

**StarKist Samoa Effluent Priority Pollutant Analysis**  
**September 2004 Sampling**

**Table 7.**  
**Data Qualifiers for StarKist Samoa Priority Pollutant Analysis**  
**September 2004**

<b>Constituents</b>	<b>Symbol</b>	<b>Interpretation</b>
All	=	Value of constituent with no qualifiers.
	U	The compound was analyzed for, but was not detected at or above the MRL/MDL (Method Reporting Limit or the Method Detection Limit)
Metals	B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL
Organics	i	The MRL/MDL has been elevated due to a chromatographic interference
	J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL
	P	The GC or HPLC confirmation criteria was exceeded. The relative difference is greater than 40% between the two analytical results (25% for CLP pesticides)
	D	The reported result is from a dilution.

**ATTACHMENT I**

**Chain-of-Custody**



REURDER 1207-1624-11	QTY 300	PPF (Non negotiable)	PPF 1-800-CALL-DHL in USA only
<b>DHL</b> WORLDWIDE EXPRESSES	<b>Shipment Airwaybill</b>		
1 From (Shipper)	147323.JC.04.TW	80660236	
Company name PA HILL	Shipper's reference		
Account no. 92373624	Quote this shipment number in an inquiry		
Shipper's name STEVE COSTA/JIM CRAWFORD	3 Shipment details		
Address 9TH FLOOR 222 3RD AVE - FAIRFIELD, BELLEVUE, WA AMERICAN SAMOA 684-633-5264	<input type="checkbox"/> U.S. DOMESTIC <input type="checkbox"/> INTERNATIONAL DOCUMENT <input type="checkbox"/> INTERNATIONAL NON DOCUMENT <input checked="" type="checkbox"/> WORLDWIDE AIR EXPRESS <input type="checkbox"/> POD <small>Shipper's fax/tel ex. for P&amp;O forwarder</small> <input type="checkbox"/> SATURDAY DELIVERY		
Zip code (required) 42345-29679	<small>Phone/Fax/Tel ex circle one</small> <small>Special Services extra charges may apply</small> <small>if desired, enter amount below</small> <small>U.S. \$ _____</small> <small>Shipment Insurance</small> <small>Insured value</small>		
2 To (Recipient)	Full description of contents		
Company name COLUMNIA ANALYTICAL SERVICES	WATER QUALITY SAMPLES FOR LABORATORY ANALYSIS NO COMMERCIAL VALUE		
Attention HAZEL TACKY	4 Harmonized Sched. B no. if applic.		
Delivery address 1317 SOUTH 13TH AVE KELSO, WA	<small>Phone/Fax/Tel ex circle one</small> <small>Harmonized Sched. B no. if applic.</small> <small>Ultimate destination</small>		
Zip/Postcode (required) 98626	5 Shipper's authorization and signature		

3 Origin GLV	4 Destination KLS
DHL AIRWAYS, INC. • 333 TWIN DOLPHIN DRIVE, REDWOOD CITY, CA 94065	
1. Pcs/Weight/Size No. of pieces 11	
Weight if DHL Express Document packaging is used, enter XD	
2. Dimensions in inches 610 x 17 x 11	
3. Dimensional Charged Weight lb	
CODES CHARGES Services	
Special services Insurance	
4. Transport Collect Sticker No. #	
5. Pick-up by Date _____ Time _____	
6. Other Specific destination approval account number Signature _____ Date _____	
7. This shipment is licensed by the U.S. for the ultimate destination named above. Division contrary to U.S. Law is prohibited	
8. Destination duties/taxes if left blank recipient pays duties/taxes <input checked="" type="checkbox"/> Shipper <input type="checkbox"/> Recipient	
9. Other Signature _____ Date _____	
10. I agree that DHL's standard terms apply to this shipment, and DHL's liability for loss or damage to U.S. \$ 100. The Warsaw Convention may also apply. I have authorized DHL to complete other documents necessary to export this shipment. I've understood that insurance is available on request. I've for an extra charge. I've agreed to pay all charges if the recipient or third party does not pay. I've agreed that DHL DOES NOT TRANSPORT CASH Signature _____ Date _____	

**ATTACHMENT II**

**Effluent Laboratory Results  
Columbia Analytical Services**

JKS



1817 South 13th Avenue P.O. Box 479 Kelso, Washington 98626 (360) 577-7222 ph (360) 636-1068 fax

November 10, 2004

Service Request No: K2407650

Steve Costa  
CH2M HILL  
PO BOX 1238  
Trinidad, CA 95570-1238

**RE: Joint Cannery Outfall -Streams / 147323.JC.04.TW**

Dear Steve:

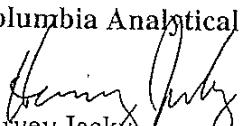
Enclosed are the results of the sample(s) submitted to our laboratory on September 30, 2004. For your reference, these analyses have been assigned our service request number K2407650.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3260.

Respectfully submitted,

Columbia Analytical Services, Inc.

  
Harvey Jacky  
Project Chemist

HJ/jeb

Page 1 of 132

### Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

### Inorganic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

### Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.
- \* The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

### Organic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

### Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- D The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

## **Case Narrative**

COLUMBIA ANALYTICAL SERVICES, INC.

Client: CH2M Hill Service Request No.: K2407650  
Project: Joint Cannery Outfall - Streams / 147323.JC.04.TW Date Received: 9/30/04  
Sample Matrix: Water

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Two water samples were received for analysis at Columbia Analytical Services on 9/30/04. The following discrepancies were noted upon initial sample inspection. The temperatures of the shipping coolers were above the upper recommended limit of 6 °C. The exceptions are also noted on the cooler receipt and preservation form included in this data package. Except as noted, the samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

Bromide by EPA Method 300.0:

The reporting limit is elevated for Bromide in sample COS-PP04 because the sample required dilution. The chromatogram indicated the presence of non-target background components (i.e. Chloride) that prevented adequate resolution of the target analyte at the reporting limit. The result is flagged to indicate the matrix interference.

Total Phosphorus by EPA Method 365.3:

The matrix spike recovery of Phosphorus for sample SKS-PP04 was outside control criteria because of suspected matrix interference. A Matrix Spike Duplicate (MSD) was also analyzed, but produced similar results. The results of the original analysis are reported. No further corrective action was appropriate.

Total Phenolics by EPA Method 420.1:

The matrix spike recovery of Phenolics for sample Batch QC was outside control criteria because of suspected matrix interference. A Matrix Spike Duplicate (MSD) was also analyzed, but produced similar results. The results of the original analysis are reported. No further corrective action was appropriate.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Oil and Grease by EPA Method 1664

Matrix Spike Recovery Exceptions:

The matrix spike recovery of Oil and Grease, Total (HEM) for sample Batch QC is not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. No further corrective action was appropriate.

Approved by \_\_\_\_\_

*HK* Date 11/16/04

### Organochlorine Pesticides and PCBs by EPA Method 608

#### Holding Time Exceptions:

Samples SKS-PP04 and CO5-PP04 were received with insufficient hold time remaining to complete the analysis within the recommended limit. The analysis was performed as soon as possible after receipt by the laboratory. The data is flagged to indicate the holding time violation.

#### Continuing Calibration Verification (CCV) Exceptions:

The analysis of Chlorinated Pesticides and PCB Aroclors by EPA 608 requires the use of dual column confirmation. When the CCV criteria are met for both columns, the higher of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for CCV 1025F018, 1025F041, and 1025F043 Endosulfan Sulfate, Decachlorobiphenyl, Endosulfan II, Endrin Aldehyde, Heptachlor, and/or Chlordane. The results are reported from the column with an acceptable CCV. The data quality is not affected. No further corrective action was appropriate.

#### Sample Confirmation Notes:

Flag JP: The confirmation comparison criteria are not applicable because at least one of the values is below the Method Reporting Limit (MRL).

#### Elevated Method Reporting Limits:

The reporting limit is elevated for all analytes in all samples. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. A semiquantitative screen was performed prior to final analysis. The results of the screening indicated the need to perform a dilution. The results are flagged to indicate the matrix interference.

The reporting limit is further elevated for few analytes in all samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the reporting limit. The results are flagged to indicate the matrix interference.

The MDL is elevated for 4,4'-DDE in sample Method Blank KWG0415263-3. The chromatogram indicated the presence of non-target background components, which were apparently introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the MDL. Note the level of background was relatively low compared to the MDL, so the affect on the results was minimal. The results are flagged to indicate the anomaly.

### Volatile Organic Compounds by EPA Method 624

#### Surrogate Exceptions:

The control criteria were exceeded for the following surrogate in sample COS-PP04 and Batch QC due to matrix interferences: 4-Bromofluorobenzene. A reanalysis was performed, but produced similar results. The results of the original analysis are reported. No further corrective action was required.

#### Matrix Spike Recovery Exceptions:

The matrix spike recovery(ies) of 1,1-Dichloroethene and Benzene for sample Batch QCMS and Batch QCDMS were outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential high bias in this matrix. No further corrective action was appropriate.

The matrix spike recovery(ies) of Toluene, Chlorobenzene, and 1,2-Dichlorobenzene for sample Batch QCDMS were outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential high bias in this matrix. No further corrective action was appropriate.

Approved by \_\_\_\_\_

 Date 11/6/04

**Laboratory Control Sample (LCS) Exceptions:**

The advisory criterion was exceeded for the following analyte in Laboratory Control Sample (LCS) KWG0416904-1: Acrylonitrile. As per the CAS/Kelso Standard Operating Procedure (SOP) for this method, these compounds are not included in the subset of analyte used to control the analysis. The recovery information reported for this analyte is for advisory purposes only (i.e. to provide additional detail related to the performance of each individual compound). No further corrective action was required.

**Relative Percent Difference (RPD) Exceptions:**

The RPD for the following analytes in the replicate LCS analyses (kwg0416904-1 and kwg0416904-2) was outside control criteria: 2-Chloroethyl Vinyl Ether. Analysis of samples associated with this LCS/DLCS resulted in no hits for this compound. The data is flagged to indicate the anomaly.

**Semivolatile Organic Compounds by EPA Method 625**

**Holding Time Exceptions:**

Samples SKS-PP04 and COS-PP04 were received past the recommended holding time. The analysis was performed as soon as possible after receipt by the laboratory. The data is flagged to indicate the holding time anomaly.

**Second Source Exceptions:**

The upper control criterion was exceeded for Benzidine in Initial Calibration Verification (ICV) MS07/1006G002.D. The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem equates to a potential high bias, the data quality is not affected. No further corrective action was required.

The upper control criterion was exceeded for Benzidine in Initial Calibration Verification (ICV) MS07/1012F016.D. The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem equates to a potential high bias, the data quality is not affected. No further corrective action was required.

**Continuing Calibration Verification (CCV) Exceptions:**

The upper control criterion was exceeded for Benzidine in CCV MS07\1013F002.D. The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem equates to a potential high bias, the data quality is not affected. No further corrective action was appropriate.

Approved by \_\_\_\_\_

*HK* Date 11/16/04

## **General Chemistry Parameters**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04

Bromide

Analysis Method 300.0  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
SKS-PP04	K2407650-001	20	6	100	10/05/04	21.1	
Method Blank	K2407650-MB	0.2	0.06	1	10/05/04	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : NA  
Date Received : NA  
Date Extracted : NA  
Date Analyzed : 10/05/04

Duplicate Summary  
Inorganic Parameters

Sample Name : Batch QC  
Lab Code : K2407737-001DUP  
Test Notes :

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
bromide		300.0	0.2	ND	ND	ND	-

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/05/04

Matrix Spike Summary  
 Inorganic Parameters

Sample Name : Batch QC  
 Lab Code : K2407737-001MS  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery		Acceptance Limits	Result Notes
							Recovery	Acceptance		
Bromide		300.0	0.2	4.0	ND	4.3	108	90-110		

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/05/04

Laboratory Control Sample Summary  
 Inorganic Parameters

Sample Name : Laboratory Control Sample  
 Job Code : K2407650-LCS  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Prep Method	Analysis Method				Percent Recovery	Acceptance Limits	Result Notes
			True Value	Result	CAS Percent Recovery			
Chromide	None	300.0	4.0	4.3	108	90-110		

# COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
Project : Joint Cannery Outfall -Streams

Service Request : K2407650  
Date Collected : NA  
Date Received : NA

Bromide  
EPA Method 300.0  
Units: mg/L (ppm)

### CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
:CCV1 Result	10/05/04	2.0	1.8	90
:CCV2 Result	10/05/04	2.0	1.8	90
:CCV3 Result	10/05/04	2.0	1.9	95
:CCV4 Result	10/05/04	2.0	1.9	95
:CCV5 Result	10/05/04	2.0	1.8	90
:CCV6 Result	10/05/04	2.0	1.8	90
:CCV7 Result	10/05/04	2.0	1.8	90
:CCV8 Result	10/05/04	2.0	1.9	95

### CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
:CB1 Result	10/05/04	0.2	ND
:CB2 Result	10/05/04	0.2	ND
:CB3 Result	10/05/04	0.2	ND
:CB4 Result	10/05/04	0.2	ND
:CB5 Result	10/05/04	0.2	ND
:CB6 Result	10/05/04	0.2	ND
:CB7 Result	10/05/04	0.2	ND
:CB8 Result	10/05/04	0.2	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04

Sulfate

Analysis Method 300.0  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
SKS-PP04	K2407650-001	100	45	500	10/05/04	933	
Method Blank	K2407650-MB	0.2	0.09	1	10/05/04	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : NA  
Date Received : NA  
Date Extracted : NA  
Date Analyzed : 10/05/04

Duplicate Summary  
Inorganic Parameters

Sample Name : Batch QC  
Lab Code : K2407737-001DUP  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Sulfate		300.0	0.2	0.6	0.7	0.7	14

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/05/04

Matrix Spike Summary  
 Inorganic Parameters

Sample Name : Batch QC  
 Job Code : K2407737-001MS  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked		Percent Recovery	Acceptance Limits	Result Notes	CAS
					Sample Result	Percent Recovery				Percent Recovery
Sulfate		300.0	0.2	4.0	0.6	4.3	93	80-120		

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/05/04

Laboratory Control Sample Summary  
 Inorganic Parameters

Sample Name : Laboratory Control Sample  
 Job Code : K2407650-LCS  
 Test Notes :

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery	Acceptance Limits	Result Notes
Sulfate	None	300.0	5.0	4.7	94		90-110	

# COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
Project : Joint Cannery Outfall -Streams

Service Request : K2407650  
Date Collected : NA  
Date Received : NA

Sulfate  
EPA Method 300.0  
Units: mg/L (ppm)

### CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
CV1 Result	10/05/04	5.0	4.7	94
CV2 Result	10/05/04	5.0	4.8	96
CV3 Result	10/05/04	5.0	4.8	96
CV4 Result	10/05/04	5.0	4.7	94
CV5 Result	10/05/04	5.0	4.7	94
CV6 Result	10/05/04	5.0	4.8	96
CV7 Result	10/05/04	5.0	4.8	96
CV8 Result	10/05/04	5.0	4.8	96

### CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CB1 Result	10/05/04	0.2	ND
CB2 Result	10/05/04	0.2	ND
CB3 Result	10/05/04	0.2	ND
CB4 Result	10/05/04	0.2	ND
CB5 Result	10/05/04	0.2	ND
CB6 Result	10/05/04	0.2	ND
CB7 Result	10/05/04	0.2	ND
CB8 Result	10/05/04	0.2	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04

Cyanide, Total

Analysis Method 335.2

Test Notes :

Units : mg/L (ppm)  
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
SKS-PP04	K2407650-001	0.01	0.003	1	10/05/04	ND	
Method Blank	K2407650-MB	0.01	0.003	1	10/05/04	ND	

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : NA  
Date Received : NA  
Date Extracted : NA  
Date Analyzed : 10/05/04

Duplicate Summary  
Inorganic Parameters

Sample Name : Batch QC  
Lab Code : K2407645-001DUP  
Test Notes :

Analyte	Analysis Method	MRL	Duplicate		Relative Percent Difference	Result Notes
			Sample Result	Sample Result		
Cyanide, Total		335.2	0.01	ND	ND	ND

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/05/04

Matrix Spike Summary  
 Inorganic Parameters

Sample Name : Batch QC  
 Job Code : K2407645-001MS  
 Test Notes :

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked		Acceptance Limits	CAS Percent Recovery	Result Notes
					Sample Result	Percent Recovery			
Nitrate, Total		335.2	0.01	0.10	ND	0.10	100	75-125	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/05/04

Laboratory Control Sample Summary  
 Inorganic Parameters

Sample Name : Laboratory Control Sample  
 Lab Code : K2407650-LCS  
 Test Notes :

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery	Acceptance Limits	Result Notes
Iyanide, Total	None	335.2	0.52	0.49	94		85-115	

# COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
Project : Joint Cannery Outfall -Streams

Service Request : K2407650  
Date Collected : NA  
Date Received : NA

Cyanide, Total  
EPA Method 335.2  
Units: ug/L (ppb)

### CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
CV1 Result	10/07/04	100	105	105
CV1 Result	10/07/04	100	98	98
CV2 Result	10/07/04	100	105	105
CV2 Result	10/07/04	100	99	99
CV3 Result	10/07/04	100	103	103
CV3 Result	10/07/04	100	98	98
CV4 Result	10/07/04	100	101	101
CV4 Result	10/07/04	100	92	92
CV5 Result	10/07/04	100	98	98

### CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CB1 Result	10/07/04	10	ND
CB1 Result	10/07/04	10	ND
CB2 Result	10/07/04	10	ND
CB2 Result	10/07/04	10	ND
CB3 Result	10/07/04	10	ND
CB3 Result	10/07/04	10	ND
CB4 Result	10/07/04	10	ND
CB4 Result	10/07/04	10	ND
CB5 Result	10/07/04	10	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04

Chemical Oxygen Demand

Analysis Method 410.1  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
SKS-PP04	K2407650-001	100	100	2	10/11/04	1400	
Method Blank	K2407650-MB	50	50	1	10/11/04	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04  
Date Extracted : NA  
Date Analyzed : 10/11/04

Duplicate Summary  
Inorganic Parameters

Sample Name : COS-PP04  
Lab Code : K2407650-002DUP  
Test Notes :

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Chemical Oxygen Demand	410.1	100	1020	1090	1060	7	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : 09/23/04  
 Date Received : 09/30/04  
 Date Extracted : NA  
 Date Analyzed : 10/11/04

Matrix Spike Summary  
 Inorganic Parameters

Sample Name : COS-PP04 Units : mg/L (ppm)  
 Job Code : K2407650-002MS Basis : NA  
 Test Notes :

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery		Acceptance Limits	Result Notes
							Spiked Sample Result	Percent Recovery		
Chemical Oxygen Demand	410.1	130	1000	1020	2050	103			75-125	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	CH2M Hill	Service Request :	K2407650
Project Name :	Joint Cannery Outfall -Streams	Date Collected :	NA
Project Number :	147323.JC.04.TW	Date Received :	NA
Sample Matrix :	WATER	Date Extracted :	NA
		Date Analyzed :	10/11/04

Laboratory Control Sample Summary  
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	K2407650-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	CAS Percent Recovery				Acceptance Limits	Result Notes
			True Value	Result	Percent Recovery			
Chemical Oxygen Demand	None	410.1	342	327	96		85-115	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04

Ammonia as Nitrogen

Analysis Method 350.1  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
SKS-PP04	K2407650-001	1.3	0.75	25	10/01/04	37.6	
Method Blank	K2407650-MB	0.05	0.03	1	10/01/04	ND	

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

**Service Request :** K2407650  
**Date Collected :** NA  
**Date Received :** NA  
**Date Extracted :** NA  
**Date Analyzed :** 10/01/04

## Duplicate Summary Inorganic Parameters

Sample Name : Batch QC  
Lab Code : K2407645-002DUP  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Sample Result	Duplicate Average	Relative Percent	Result Notes
Ammonia as Nitrogen		350.1	1.3	32.0	33.5	32.8	5

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/01/04

Matrix Spike Summary  
 Inorganic Parameters

Sample Name : Batch QC  
 Lab Code : K2407645-002MS  
 Test Notes :

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery		Acceptance Limits	Result Notes
							Sample Recovery	Percent Recovery		
Ammonia as Nitrogen		350.1	1.3	50.0	32.0	84.9	106	90-110		

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/01/04

Laboratory Control Sample Summary  
 Inorganic Parameters

Sample Name : Laboratory Control Sample  
 Lab Code : K2407650-LCS  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Prep Method	Analysis Method	CAS				Acceptance Limits	Result Notes
			True Value	Result	Percent Recovery	Percent Recovery		
Ammonia as Nitrogen	None	350.1	4.84	4.64	96	96	90-110	

# COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
Project : Joint Cannery Outfall -Streams

Service Request : K2407650  
Date Collected : NA  
Date Received : NA

Ammonia as Nitrogen  
EPA Method 350.1  
Units: mg/L (ppm)

### CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
CCV1 Result	10/01/04	2.00	1.93	97
CCV2 Result	10/01/04	2.00	1.96	98
CCV3 Result	10/01/04	2.00	1.93	97
CCV4 Result	10/01/04	2.00	1.96	98
CCV5 Result	10/01/04	2.00	1.97	99
CCV6 Result	10/01/04	2.00	1.94	97
CCV7 Result	10/01/04	2.00	1.95	98
CCV9 Result	10/01/04	2.00	2.01	101
CCV10 Result	10/01/04	2.00	2.03	102
CCV11 Result	10/01/04	2.00	1.98	99
CCV12 Result	10/01/04	2.00	1.99	100

### CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CB1 Result	10/01/04	0.05	ND
CB2 Result	10/01/04	0.05	ND
CB3 Result	10/01/04	0.05	ND
CB4 Result	10/01/04	0.05	ND
CB5 Result	10/01/04	0.05	ND
CB6 Result	10/01/04	0.05	ND
CB7 Result	10/01/04	0.05	ND
CB9 Result	10/01/04	0.05	ND
CB10 Result	10/01/04	0.05	ND
CB11 Result	10/01/04	0.05	ND
CB12 Result	10/01/04	0.05	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04

Methylene Blue Active Substances (MBAS)

Analysis Method 425.1		Units : mg/L (ppm) Basis : NA							
Test Notes :		Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
	SKS-PP04		K2407650-001	0.05	0.03	1	10/06/04	0.07	X
	Method Blank		K2407650-MB	0.05	0.03	1	10/02/04	ND	
	Method Blank		K2407650-MB	0.05	0.03	1	10/06/04	ND	

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/02/04

Duplicate Summary  
Inorganic Parameters

Sample Name : Batch QC  
 Job Code : K2407645-001DUP  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Ethylene Blue Active Substances (MBAS)		425.1	0.5	0.7	0.7	<1	X

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04  
Date Extracted : NA  
Date Analyzed : 10/06/04

Duplicate Summary  
Inorganic Parameters

Sample Name : SKS-PP04  
Lab Code : K2407650-001DUP  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Ethylene Blue Active Substances (MBAS)		425.1	0.05	0.07	0.07	<1	X

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/02/04

Matrix Spike Summary  
 Inorganic Parameters

Sample Name : Batch QC  
 Job Code : K2407645-001MS  
 Test Notes :

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery		Acceptance Limits	Result Notes
							Recovery	Percent Recovery		
Ethylene Blue Active substances (MBAS)		425.1	0.5	3.0	0.7	2.9	73	60-130	X	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : 09/23/04  
 Date Received : 09/30/04  
 Date Extracted : NA  
 Date Analyzed : 10/06/04

Matrix Spike Summary  
Inorganic Parameters

Sample Name : SKS-PP04  
 Lab Code : K2407650-001MS  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery		Acceptance Limits	Result Notes
							Recovery	Acceptance		
Methylene Blue Active Substances (MBAS)	425.1	0.05	0.30	0.07	0.31	80	60-130	X		

# COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
Project : Joint Cannery Outfall -Streams

Service Request : K2407650  
Date Collected : NA  
Date Received : NA

Methylene Blue Active Substances (MBAS)  
EPA Method 425.1  
Units: mg/L (ppm)

### CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
CV1 Result	10/02/04	0.30	0.26	87
CV2 Result	10/02/04	0.30	0.27	90
CV3 Result	10/02/04	0.30	0.27	90
CV1 Result	10/06/04	0.30	0.27	90
CV2 Result	10/06/04	0.30	0.28	93

### CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CB1 Result	10/02/04	0.05	ND
CB2 Result	10/02/04	0.05	ND
CB3 Result	10/02/04	0.05	ND
CB1 Result	10/06/04	0.05	ND
CB2 Result	10/06/04	0.05	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : Water

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04

Solids, Total Suspended (TSS)

Analysis Method 160.2  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
SKS-PP04	K2407650-001	5	5	1	09/30/04	62	
Method Blank	K2407650-MB	5	5	1	09/30/04	ND	

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : Water

Service Request : K2407650  
 Date Collected : 09/23/04  
 Date Received : 09/30/04  
 Date Extracted : NA  
 Date Analyzed : 09/30/04

Duplicate Summary  
Inorganic Parameters

Sample Name : SKS-PP04 Units : mg/L (ppm)  
 Job Code : K2407650-001DUP Basis : NA  
 Test Notes :

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Solids, Total Suspended (TSS)		160.2	5	62	72	67	15

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 09/30/04

Laboratory Control Sample Summary  
 Inorganic Parameters

Sample Name : Lab Control Sample  
 Lab Code : K2407650-LCS  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Prep Method	Analysis Method	CAS				Acceptance Limits	Result Notes
			True Value	Result	Percent Recovery	Percent Recovery		
Solids, Total Suspended (TSS)	None	160.2	311	300	96	85-115		

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04

Phosphorus, Total

Analysis Method 365.3

Units : mg/L (ppm)  
Basis : NA

Test Notes :

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
SKS-PP04	K2407650-001	0.3	0.075	25	10/05/04	11.6	
Method Blank	K2407650-MB	0.01	0.003	1	10/05/04	ND	

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : 09/23/04  
 Date Received : 09/30/04  
 Date Extracted : NA  
 Date Analyzed : 10/05/04

Duplicate Summary  
Inorganic Parameters

Sample Name : SKS-PP04  
 Job Code : K2407650-001DUP  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
phosphorus, Total		365.3	0.3	11.6	10.8	11.2	7

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : 09/23/04  
 Date Received : 09/30/04  
 Date Extracted : NA  
 Date Analyzed : 10/05/04

Matrix Spike Summary  
Inorganic Parameters

Sample Name : SKS-PP04 Units : mg/L (ppm)  
 Job Code : K2407650-001MS Basis : NA  
 Test Notes :

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result		Acceptance Limits	Result Notes	CAS Percent Recovery
					Sample Recovery	Percent Recovery			CAS Percent Recovery
Phosphorus, Total		365.3	0.3	0.50	11.6	11.9	60	76-118	*

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/05/04

Laboratory Control Sample Summary  
Inorganic Parameters

Sample Name : Lab Control Sample  
 Lab Code : K2407650-LCS  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Prep Method	Analysis Method	True Value	Result	CAS	Acceptance Limits	Result Notes
					Percent Recovery		
phosphorus, Total	None	365.3	3.29	3.20	97	94-108	

# COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
Project : Joint Cannery Outfall -Streams

Service Request : K2407650  
Date Collected : NA  
Date Received : NA

Phosphorus, Total  
EPA Method 365.3  
Units: mg/L (ppm)

### CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
CV1 Result	10/05/04	0.50	0.49	98
CV2 Result	10/05/04	0.50	0.50	100
CV3 Result	10/05/04	0.50	0.50	100
CV4 Result	10/05/04	0.50	0.50	100

### CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CB1 Result	10/05/04	0.01	ND
CB2 Result	10/05/04	0.01	ND
CB3 Result	10/05/04	0.01	ND
CB4 Result	10/05/04	0.01	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04

Phenolics, Total

Analysis Method 420.1  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
SKS-PP04	K2407650-001	0.01	0.003	1	10/06/04	0.32	
Method Blank	K2407650-MB	0.01	0.003	1	10/06/04	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : NA  
Date Received : NA  
Date Extracted : NA  
Date Analyzed : 10/06/04

Duplicate Summary  
Inorganic Parameters

Sample Name : BatchQC  
Lab Code : K2407645-001DUP  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
phenolics, Total	420.1	0.01	0.05	0.05	0.05	<1	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/06/04

Matrix Spike Summary  
 Inorganic Parameters

Sample Name : BatchQC  
 Job Code : K2407645-001MS  
 Test Notes :

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery	
							Acceptance Limits	Result Notes
Phenolics, Total	420.1	0.01	0.40	0.05	0.41	90	75-125	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/06/04

Laboratory Control Sample Summary  
 Inorganic Parameters

Sample Name : Lab Control Sample  
 Job Code : K2407650-LCS  
 Test Notes :

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery	Acceptance Limits	Result Notes
phenolics, Total	None	420.1	0.50	0.50	100	85-115		

# COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
Project : Joint Cannery Outfall -Streams

Service Request : K2407650  
Date Collected : NA  
Date Received : NA

Phenolics, Total  
EPA Method 420.1  
Units: mg/L (ppm)

### CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
CV1 Result	10/06/04	0.50	0.50	100
CV2 Result	10/06/04	0.50	0.50	100
CV3 Result	10/06/04	0.50	0.50	100

### CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CB1 Result	10/06/04	0.01	ND
CB2 Result	10/06/04	0.01	ND
CB3 Result	10/06/04	0.01	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04

Carbon, Total Organic

Analysis Method 415.1  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
SKS-PP04	K2407650-001	25	3.5	50	10/07/04	214	
Method Blank	K2407650-MB	0.5	0.07	1	10/07/04	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04  
Date Extracted : NA  
Date Analyzed : 10/07/04

Duplicate Summary  
Inorganic Parameters

Sample Name : SKS-PP04  
Lab Code : K2407650-001DUP  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Carbon, Total Organic	415.1	25	214	219	217	2	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : 09/23/04  
 Date Received : 09/30/04  
 Date Extracted : NA  
 Date Analyzed : 10/07/04

Matrix Spike Summary  
 Inorganic Parameters

Sample Name : SKS-PP04  
 Lab Code : K2407650-001MS  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery	
							Acceptance Limits	Result Notes
Carbon, Total Organic	415.1	25	1250	214	1370	92	76-121	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 10/07/04

Laboratory Control Sample Summary  
 Inorganic Parameters

Sample Name : Laboratory Control Sample  
 Lab Code : K2407650-LCS  
 Test Notes :

Analyte	Prep Method	Analysis Method				Percent Recovery	Acceptance Limits	Result Notes
			True Value	Result	Percent Recovery			
Carbon, Total Organic	None	415.1	30.1	29.1	97	92-106		

# COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill

Project : Joint Cannery Outfall -Streams

Service Request : K2407650

Date Collected : NA

Date Received : NA

Carbon, Total Organic  
EPA Method 415.1  
Units: mg/L (ppm)

### CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
CCV1 Result	10/07/04	25.0	25.3	101
CCV2 Result	10/07/04	25.0	25.8	103
CCV3 Result	10/07/04	25.0	26.0	104
CCV4 Result	10/07/04	25.0	25.6	102
CCV5 Result	10/07/04	25.0	25.3	101
CCV6 Result	10/07/04	25.0	24.8	99
CCV7 Result	10/07/04	25.0	24.9	100
CCV8 Result	10/07/04	25.0	25.7	103

### CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CB1 Result	10/07/04	0.5	ND
CB2 Result	10/07/04	0.5	ND
CB3 Result	10/07/04	0.5	ND
CB4 Result	10/07/04	0.5	ND
CB5 Result	10/07/04	0.5	ND
CB6 Result	10/07/04	0.5	ND
CB7 Result	10/07/04	0.5	ND
CB8 Result	10/07/04	0.5	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04

Sulfite

Analysis Method 377.1  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
SKS-PP04	K2407650-001	2	0.3	1	10/01/04	55	
Method Blank	K2407650-MB	2	0.3	1	10/01/04	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : NA  
Date Received : NA  
Date Extracted : NA  
Date Analyzed : 10/01/04

Duplicate Summary  
Inorganic Parameters

Sample Name : BatchQC  
Lab Code : K2407645-001DUP  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Analyte	Analysis Method	MRL	Duplicate		Relative	
			Sample Result	Sample Result	Average	Percent Difference
Sulfite		377.1	2	13	13	13

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04

Sulfide, Total

Analysis Method 376.2  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
SKS-PP04	K2407650-001	0.2	0.024	4	09/30/04	4.87	
Method Blank	K2407650-MB	0.05	0.006	1	09/30/04	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : 09/23/04  
 Date Received : 09/30/04  
 Date Extracted : NA  
 Date Analyzed : 09/30/04

Duplicate Summary  
 Inorganic Parameters

Sample Name : COS-PP04  
 Lab Code : K2407650-002DUP  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Sulfide, Total		376.2	0.05	0.97	0.96	0.97	1

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : 09/23/04  
 Date Received : 09/30/04  
 Date Extracted : NA  
 Date Analyzed : 09/30/04

Matrix Spike Summary  
 Inorganic Parameters

Sample Name : COS-PP04  
 Lab Code : K2407650-002MS  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery		Acceptance Limits	Result Notes
							Recovery	Acceptance		
Sulfide, Total		376.2	0.05	1.76	0.97	4.06	176	75-125	*	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : NA  
 Date Received : NA  
 Date Extracted : NA  
 Date Analyzed : 09/30/04

Laboratory Control Sample Summary  
 Inorganic Parameters

Sample Name : Lab Control Sample  
 Lab Code : K2407650-LCS  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Prep Method	Analysis Method	CAS				Result Notes
			True Value	Result	Percent Recovery	Acceptance Limits	
Sulfide, Total	None	376.2	1.76	1.74	99	85-115	

# COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
Project: Joint Cannery Outfall -Streams

Service Request : K2407650  
Date Collected : NA  
Date Received : NA

Sulfide, Total  
EPA Method 376.2  
Units: mg/L (ppm)

### CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
CCV1 Result	09/30/04	1.76	1.74	99
CCV2 Result	09/30/04	1.76	1.72	98

### CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CCB1 Result	09/30/04	0.05	ND
CCB2 Result	09/30/04	0.05	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : 09/23/04  
Date Received : 09/30/04

Nitrogen, Total Kjeldahl (TKN)

Analysis Method 351.4  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
SKS-PP04	K2407650-001	3.0	1.75	25	10/05/04	64.1	
Method Blank	K2407650-MB	0.1	0.07	1	10/05/04	ND	

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : 09/23/04  
 Date Received : 09/30/04  
 Date Extracted : NA  
 Date Analyzed : 10/05/04

Duplicate Summary  
Inorganic Parameters

Sample Name : SKS-PP04  
 Lab Code : K2407650-001DUP  
 Test Notes :

Units : mg/L (ppm)  
 Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Nitrogen, Total Kjeldahl (TKN)		351.4	3.0	64.1	64.1	64.1	<1

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
 Project Name : Joint Cannery Outfall -Streams  
 Project Number : 147323.JC.04.TW  
 Sample Matrix : WATER

Service Request : K2407650  
 Date Collected : 09/23/04  
 Date Received : 09/30/04  
 Date Extracted : NA  
 Date Analyzed : 10/05/04

Matrix Spike Summary  
 Inorganic Parameters

Sample Name : SKS-PP04  
 Lab Code : K2407650-001MS  
 Test Notes :

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery		Acceptance Limits	Result Notes
							Percent Recovery	Acceptance Limits		
Nitrogen, Total Kjeldahl (TKN)		351.4	3.0	20.0	64.1	88.6	123	75-125		

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CH2M Hill  
Project Name : Joint Cannery Outfall -Streams  
Project Number : 147323.JC.04.TW  
Sample Matrix : WATER

Service Request : K2407650  
Date Collected : NA  
Date Received : NA  
Date Extracted : NA  
Date Analyzed : 10/05/04

Laboratory Control Sample Summary  
Inorganic Parameters

Sample Name : Laboratory Control Sample  
Lab Code : K2407650-LCS  
Test Notes :

Units : mg/L (ppm)  
Basis : NA

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery	Acceptance Limits	Result Notes
Nitrogen, Total Kjeldahl (TKN)	None	351.4	8.5	8.1	95	85-115		

# COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client : CH2M Hill  
Project : Joint Cannery Outfall -Streams

Service Request : K2407650  
Date Collected : NA  
Date Received : NA

Nitrogen, Total Kjeldahl (TKN)  
EPA Method 351.4  
Units: mg/L (ppm)

### CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
CCV1 Result	10/05/04	10.0	9.5	95
CCV2 Result	10/05/04	10.0	9.8	98
CCV3 Result	10/05/04	10.0	10.6	106
CCV4 Result	10/05/04	10.0	9.7	97

### CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CCB1 Result	10/05/04	0.1	ND
CCB2 Result	10/05/04	0.1	ND
CCB3 Result	10/05/04	0.1	ND
CCB4 Result	10/05/04	0.1	ND

# **Metals**

## Columbia Analytical Services

## METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: CH2M Hill

Service Request: K2407650

Project No.: 147323.JC.04.TW

Date Collected: 09/23/04

Project Name: Joint Cannery Outfall- Streams

Date Received: 09/30/04

Matrix: WATER

Units: µG/L

Basis: NA

Sample Name: SKS-PP04

Lab Code: K2407650-001

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	50	40	1	10/22/04	10/25/04	918		
Antimony	6010B	50	40	1	10/22/04	10/25/04	44.5	B	
Arsenic	7060A	25.0	5.0	5	10/21/04	10/26/04	17.5	B	
Barium	6010B	5.0	2.0	1	10/22/04	10/25/04	5.5		
Beryllium	6010B	5.0	0.4	1	10/22/04	10/25/04	0.4	U	
Boron	6010B	50	20	1	10/22/04	10/25/04	1820		
Cadmium	6010B	5.0	5.0	1	10/22/04	10/25/04	8.6		
Chromium	6010B	5.0	3.0	1	10/22/04	10/25/04	3.0	U	
Cobalt	6010B	10.0	5.0	1	10/22/04	10/25/04	5.0	U	
Copper	6010B	10.0	4.0	1	10/22/04	10/25/04	4.0	U	
Iron	6010B	20.0	20.0	1	10/22/04	10/25/04	321		
Lead	7421	4.0	2.0	2	10/21/04	10/26/04	2.0	U	
Manganese	6010B	5.0	2.0	1	10/22/04	10/25/04	22.0		
Mercury	7470A	0.20	0.04	1	10/15/04	10/18/04	0.27		
Molybdenum	6010B	10.0	9.0	1	10/22/04	10/25/04	9.0	U	
Nickel	6010B	20	20	1	10/22/04	10/25/04	20	U	
Selenium	7740	25.0	5.0	5	10/21/04	10/26/04	5.6	B	
Silver	6010B	10.0	5.0	1	10/22/04	10/25/04	5.0	U	
Thallium	7841	25.0	5.0	5	10/21/04	10/22/04	5.0	U	
Tin	6010B	50	50	1	10/22/04	10/25/04	50	U	
Titanium	6010B	10.0	2.0	1	10/22/04	10/25/04	6.1	B	
Zinc	6010B	10.0	2.0	1	10/22/04	10/25/04	260		

Solids: 0.0

Comments:

*Lumbia Analytical Services*

## METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: CH2M Hill

Service Request: K2407650

Project No.: 147323.JC.04.TW

Date Collected:

Project Name: Joint Cannery Outfall- Streams

Date Received:

Matrix: WATER

Units: µG/L

Basis: NA

Sample Name: Method Blank

Lab Code: K2407650-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	50	40	1	10/22/04	10/25/04	40	U	
Antimony	6010B	50	40	1	10/22/04	10/25/04	40	U	
Arsenic	7060A	5.0	1.0	1	10/21/04	10/26/04	1.0	U	
Barium	6010B	5.0	2.0	1	10/22/04	10/25/04	2.0	U	
Beryllium	6010B	5.0	0.4	1	10/22/04	10/25/04	0.4	U	
Boron	6010B	50	20	1	10/22/04	10/25/04	20	U	
Cadmium	6010B	5.0	5.0	1	10/22/04	10/25/04	5.0	U	
Chromium	6010B	5.0	3.0	1	10/22/04	10/25/04	3.0	U	
Cobalt	6010B	10.0	5.0	1	10/22/04	10/25/04	5.0	U	
Copper	6010B	10.0	4.0	1	10/22/04	10/25/04	4.0	U	
Iron	6010B	20.0	20.0	1	10/22/04	10/25/04	20.0	U	
Lead	7421	2.0	1.0	1	10/21/04	10/26/04	1.0	U	
Manganese	6010B	5.0	2.0	1	10/22/04	10/25/04	2.0	U	
Mercury	7470A	0.20	0.04	1	10/15/04	10/18/04	0.05	B	
Molybdenum	6010B	10.0	9.0	1	10/22/04	10/25/04	9.0	U	
Nickel	6010B	20	20	1	10/22/04	10/25/04	20	U	
Selenium	7740	5.0	1.0	1	10/21/04	10/26/04	1.0	U	
Silver	6010B	10.0	5.0	1	10/22/04	10/25/04	5.0	U	
Thallium	7841	5.0	1.0	1	10/21/04	10/22/04	1.0	U	
Tin	6010B	50	50	1	10/22/04	10/25/04	50	U	
Titanium	6010B	10.0	2.0	1	10/22/04	10/25/04	2.0	U	
Zinc	6010B	10.0	2.0	1	10/22/04	10/25/04	2.0	U	

Solids: 0.0

Comments:

Columbia Analytical Services

METALS

- 3 -

BLANKS

Client: CH2M Hill

Service Request: K2407650

Project No.: 147323.JC.04.TW

Project Name: Joint Cannery Outfall- Stream

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank C	Method
		1	C	2	C	3	C		
Aluminum	40	U	40	U	40	U	40	U	6010B
Antimony	40	U	40	U	40	U	40	U	6010B
Arsenic	1.0	U	1.0	U	1.0	U	1.0	U	7060A
Barium	2.0	U	2.0	U	2.0	U	2.0	U	6010B
Beryllium	0.4	U	0.4	U	0.4	U	0.4	U	6010B
Boron	27	B	20	U	20	U	20	U	6010B
Cadmium	5.0	U	5.0	U	5.0	U	5.0	U	6010B
Chromium	3.0	U	3.0	U	3.0	U	3.0	U	6010B
Cobalt	5.0	U	5.0	U	5.0	U	5.0	U	6010B
Copper	4.0	U	4.0	U	4.0	U	4.0	U	6010B
Iron	20.0	U	20.0	U	20.0	U	20.0	U	6010B
Lead	1.0	B	1.0	U	1.0	U	1.0	U	7421
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	6010B
Mercury	0.04	U	0.04	U	0.04	U	0.04	U	7470A
Molybdenum	9.0	U	9.0	U	9.0	U	9.0	U	6010B
Nickel	20	U	20	U	20	U	20	U	6010B
Selenium	1.0	U	1.0	U	1.0	U	1.0	U	7740
Silver	5.0	U	5.0	U	5.0	U	5.0	U	6010B
Thallium	1.7	B	1.0	U	1.0	U	1.0	U	7841
Tin	50	U	50	U	50	U	50	U	6010B
Titanium	2.0	U	2.0	U	2.0	U	2.0	U	6010B
Zinc	2.0	U	2.0	U	2.0	U	2.0	U	6010B

*Columbia Analytical Services*

## METALS

- 3 -

## BLANKS

Client: CH2M Hill

Service Request: K2407650

Project No.: 147323.JC.04.TW

Project Name: Joint Cannery Outfall- Stream

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank C	Method
		1	C	2	C	3	C		
Arsenic		1.0	U						7060A
Lead		1.0	U						7421
Mercury		0.04	U						7470A
Selenium		1.0	U						7740
Thallium		1.0	U						7841

*Columbia Analytical Services*

## METALS

-5a-

## SPIKE SAMPLE RECOVERY

Client: CH2M Hill

Service Request: K2407650

Project No.: 147323.JC.04.TW

Units: µg/L

Project Name: Joint Cannery Outfall- Streams

Basis: NA

Matrix: WATER

% Solids: 0.0

Sample Name: SKS-PP04S

Lab Code: K2407650-001S

Analyte	Control Limit %R	Spike Result C	Sample Result C	Spike Added	%R	Q	Method
Aluminum	74 - 133	2730	918	2000	91		6010B
Antimony	70 - 136	544	44.5 B	500	100		6010B
Arsenic	57 - 124	49.1	17.5 B	40.0	79		7060A
Barium	80 - 127	1800	5.5	2000	90		6010B
Beryllium	83 - 123	42.3	0.4 U	50.0	84		6010B
Boron	67 - 144	2710	1820	1000	89		6010B
Cadmium	69 - 135	57.2	8.6	50.0	97		6010B
Chromium	85 - 121	174	3.0 U	200	87		6010B
Cobalt	79 - 125	432	5.0 U	500	86		6010B
Copper	74 - 130	224	4.0 U	250	90		6010B
Iron	74 - 131	1180	321	1000	86		6010B
Lead	63 - 125	34.0	2.0 U	40.0	85		7421
Manganese	83 - 123	450	22.0	500	86		6010B
Molybdenum	73 - 127	864	9.0 U	1000	86		6010B
Nickel	82 - 124	423	20.0 U	500	84		6010B
Selenium	40 - 119	30.0	5.6 B	40.0	61		7740
Silver	31 - 156	45.7	5.0 U	50.0	91		6010B
Thallium	51 - 126	21.6 B	5.0 U	40.0	54		7841
Tin	75 - 125	9080	50.0 U	10000	91		6010B
Titanium	75 - 125	8990	6.1 B	10000	90		6010B
Zinc	86 - 121	706	260	500	89		6010B

An empty field in the Control Limit column indicates the control limit is not applicable.

*Lumbia Analytical Services*

METALS

- 5a -

SPIKE SAMPLE RECOVERY

Client: CH2M Hill

Service Request: K2407650

Project No.: 147323.JC.04.TW

Units: µg/L

Project Name: Joint Cannery Outfall- Streams

Basis: NA

Matrix: WATER

% Solids: 0.0

Sample Name: Batch QCS

Lab Code: K2407645-001S

Analyte	Control Limit %R	Spike Result C	Sample Result C	Spike Added	%R	Q	Method
Mercury	79 - 115	1.03	0.24	1.00	79		7470A

An empty field in the Control Limit column indicates the control limit is not applicable.

*Lumbia Analytical Services*

## METALS

-6-

## DUPLICATES

Client: CH2M Hill

Service Request: K2407650

Project No.: 147323.JC.04.TW

Units: µg/L

Project Name: Joint Cannery Outfall- Streams

Basis: NA

Matrix: WATER

% Solids: 0.0

Sample Name: SKS-PP04D

Lab Code: K2407650-001D

Analyte	Control Limit(%)	Sample (S) C	Duplicate (D) C	RPD	Q	Method
Aluminum	20	918	908	1		6010B
Antimony		44.5 B	41.4 B	7		6010B
Arsenic		17.5 B	17.9 B	2		7060A
Barium		5.5	5.5	0		6010B
Beryllium		0.4 U	0.4 U			6010B
Boron	20	1820	1850	2		6010B
Cadmium		8.6	5.0 U	200.0		6010B
Chromium		3.0 U	3.0 U			6010B
Cobalt		5.0 U	5.0 U			6010B
Copper		4.0 U	4.0 U			6010B
Iron	20	321	322	0		6010B
Lead		2.0 U	2.6 B	200.0		7421
Manganese		22.0	22.0	0		6010B
Molybdenum		9.0 U	9.0 U			6010B
Nickel		20 U	20 U			6010B
Selenium		5.6 B	5.0 U	200.0		7740
Silver		5.0 U	5.0 U			6010B
Thallium		5.0 U	5.0 U			7841
Tin		50 U	50 U			6010B
Titanium		6.1 B	4.7 B	27		6010B
Zinc	20	260	260	0		6010B

An empty field in the Control Limit column indicates the control limit is not applicable.

*Columbia Analytical Services*

METALS

-6-

DUPLICATES

Client: CH2M Hill Service Request: K2407650  
Project No.: 147323.JC.04.TW Units: µg/L  
Project Name: Joint Cannery Outfall- Streams Basis: NA  
Matrix: WATER % Solids: 0.0

Sample Name: Batch QCD

Lab Code: K2407645-001D

Analyte	Control Limit(%)	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury		0.24		0.16	B	37		7470A

An empty field in the Control Limit column indicates the control limit is not applicable.

**Oil & Grease**  
**EPA Method 1664**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: CH2M Hill Service Request: K2407650  
Project: Joint Cannery Outfall -Streams/147323.JC.04.TW Date Collected: 9/23/2004  
Sample Matrix: Water Date Received: 9/30/2004

Oil and Grease

Sample Name: SKS-PP04 Units: mg/L (ppm)  
Lab Code: K2407650-001 Basis: NA  
Test Notes:

Analyte	Prep Method	Analysis Method	Dilution MRL	Date Factor	Extracted	Date Analyzed	Result	Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	0.64	1	10/7/2004	10/8/2004	8.0

Approved By: M. Lulu Date: 10/13/04  
IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: CH2M Hill Service Request: K2407650  
Project: Joint Cannery Outfall -Streams/147323.JC.04.TW Date Collected: NA  
Sample Matrix: Water Date Received: NA

Oil and Grease

Sample Name: Method Blank Units: mg/L (ppm)  
Lab Code: K041007-WB Basis: NA  
Test Notes:

Analyte	Prep Method	Analysis Method	Dilution MRL	Date Factor	Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	0.64	1	10/7/2004	10/8/2004	ND

Approved By: M. Ender Date: 10/13/04  
IS22/020397p

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Collected: NA  
 Date Received: NA  
 Date Extracted: 10/7/2004  
 Date Analyzed: 10/8/2004

Matrix Spike Summary  
Oil and Grease

Sample Name:	Batch QC	Units: mg/L (ppm)
Lab Code:	K2407776-001MS	Basis: NA
Test Notes:		

Analyte	Prep Method	Analysis Method	Spike MRL	Sample Level	Spiked Result	Sample Result	CAS Percent	Acceptance Recovery	Result Recovery	Notes
							Recovery			
Oil and Grease, Total (HEM)	METHOD	1664	5.0	40	188	202	35*		78-114	

Approved By: M. Lulu Date: 10/13/04

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 LCS Matrix: Water

Service Request: K2407650  
 Date Collected: NA  
 Date Received: NA  
 Date Extracted: 10/7/2004  
 Date Analyzed: 10/8/2004

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary  
Oil and Grease

Sample Name: Lab Control Sample Units: mg/L (ppm)  
 Lab Code: K041007-WL1, K041007-WL2 Basis: NA  
 Test Notes:

Analyte	Percent Recovery								Notes	
	Prep Method	Analysis Method	True Value		Result		Acceptance Limits	Relative Percent Difference		
			LCS	DLCS	LCS	DLCS				
Oil and Grease, Total (HEM)	METHOD	1664	40	40	36.9	36.2	92	90	.78-114	2

Approved By: M. Culver Date: 10/13/04

**Organochlorine Pesticides  
&  
Polychlorinated Biphenyls (PCBs)  
EPA Method 608**

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

lient: CH2M Hill  
 roject: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 ample Matrix: Water

Service Request: K2407650  
 Date Collected: 09/23/2004  
 Date Received: 09/30/2004

## Organochlorine Pesticides and Polychlorinated Biphenyls

ample Name: SKS-PP04 Units: ug/L  
 ab Code: K2407650-001 Basis: NA  
 xtraction Method: EPA 3520C Level: Low  
 nalysis Method: 608M

alyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
ha-BHC	ND	Ui	0.23	0.23	5	10/06/04	10/26/04	KWG0415263	*
ta-BHC	ND	Ui	0.052	0.052	5	10/06/04	10/26/04	KWG0415263	*
mna-BHC (Lindane)	ND	Ui	0.052	0.025	5	10/06/04	10/26/04	KWG0415263	*
ta-BHC	ND	U	0.052	0.0073	5	10/06/04	10/26/04	KWG0415263	*
ptachlor	ND	Ui	0.052	0.0098	5	10/06/04	10/26/04	KWG0415263	*
drin	ND	Ui	0.052	0.042	5	10/06/04	10/26/04	KWG0415263	*
ptachlor Epoxide	ND	Ui	0.052	0.0048	5	10/06/04	10/26/04	KWG0415263	*
dosulfan I	ND	Ui	0.052	0.0062	5	10/06/04	10/26/04	KWG0415263	*
eldrin	ND	U	0.052	0.0036	5	10/06/04	10/26/04	KWG0415263	*
I-DDE	ND	Ui	0.052	0.052	5	10/06/04	10/26/04	KWG0415263	*
drin	ND	Ui	0.052	0.043	5	10/06/04	10/26/04	KWG0415263	*
dosulfan II	ND	U	0.052	0.0098	5	10/06/04	10/26/04	KWG0415263	*
I-DDD	ND	Ui	0.074	0.074	5	10/06/04	10/26/04	KWG0415263	*
drin Aldehyde	ND	U	0.052	0.0062	5	10/06/04	10/26/04	KWG0415263	*
dosulfan Sulfate	ND	U	0.052	0.0073	5	10/06/04	10/26/04	KWG0415263	*
I-DDT	ND	U	0.052	0.013	5	10/06/04	10/26/04	KWG0415263	*
xaphene	ND	Ui	5.2	1.2	5	10/06/04	10/26/04	KWG0415263	*
lordane	ND	Ui	5.2	0.76	5	10/06/04	10/26/04	KWG0415263	*
oclor 1016	ND	U	1.1	0.11	1	10/06/04	10/23/04	KWG0415263	*
oclor 1221	ND	U	1.1	0.066	1	10/06/04	10/23/04	KWG0415263	*
oclor 1232	ND	U	1.1	0.045	1	10/06/04	10/23/04	KWG0415263	*
oclor 1242	ND	U	1.1	0.087	1	10/06/04	10/23/04	KWG0415263	*
oclor 1248	ND	U	1.1	0.018	1	10/06/04	10/23/04	KWG0415263	*
oclor 1254	ND	U	1.1	0.0087	1	10/06/04	10/23/04	KWG0415263	*
oclor 1260	ND	U	1.1	0.022	1	10/06/04	10/23/04	KWG0415263	*

## ee Case Narrative

rogate Name	%Rec	Control Limits	Date Analyzed	Note
achloro-m-xylene	55	15-116	10/26/04	Acceptable
achlorobiphenyl	38	10-153	10/26/04	Acceptable

amments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Collected: NA  
 Date Received: NA

Organochlorine Pesticides and Polychlorinated Biphenyls

Sample Name: Method Blank Units: ug/L  
 Job Code: KWG0415263-3 Basis: NA  
 Extraction Method: EPA 3520C Level: Low  
 Analysis Method: 608M

Analyst Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND U	0.0098	0.0021	1	10/06/04	10/25/04	KWG0415263	
beta-BHC	ND U	0.0098	0.0024	1	10/06/04	10/25/04	KWG0415263	
gamma-BHC (Lindane)	ND U	0.0098	0.0020	1	10/06/04	10/25/04	KWG0415263	
delta-BHC	ND U	0.0098	0.0014	1	10/06/04	10/25/04	KWG0415263	
heptachlor	ND U	0.0098	0.0016	1	10/06/04	10/25/04	KWG0415263	
drin	ND U	0.0098	0.0016	1	10/06/04	10/25/04	KWG0415263	
heptachlor Epoxide	ND U	0.0098	0.00088	1	10/06/04	10/25/04	KWG0415263	
dosulfan I	ND U	0.0098	0.00059	1	10/06/04	10/25/04	KWG0415263	
heptadrin	ND U	0.0098	0.00068	1	10/06/04	10/25/04	KWG0415263	
gamma-DDE	ND U	0.0098	0.0088	1	10/06/04	10/25/04	KWG0415263	
drin Aldehyde	ND U	0.0098	0.0014	1	10/06/04	10/25/04	KWG0415263	
dosulfan Sulfate	ND U	0.0098	0.0019	1	10/06/04	10/25/04	KWG0415263	
gamma-DDD	ND U	0.0098	0.00080	1	10/06/04	10/25/04	KWG0415263	
drin Aldehyde	ND U	0.0098	0.0012	1	10/06/04	10/25/04	KWG0415263	
dosulfan Sulfate	ND U	0.0098	0.0014	1	10/06/04	10/25/04	KWG0415263	
gamma-DDT	ND U	0.0098	0.0024	1	10/06/04	10/25/04	KWG0415263	
xaphene	ND U	0.98	0.18	1	10/06/04	10/25/04	KWG0415263	
lindane	ND U	0.98	0.055	1	10/06/04	10/25/04	KWG0415263	
PCP 1016	ND U	0.98	0.10	1	10/06/04	10/22/04	KWG0415263	
PCP 1221	ND U	0.98	0.064	1	10/06/04	10/22/04	KWG0415263	
PCP 1232	ND U	0.98	0.043	1	10/06/04	10/22/04	KWG0415263	
PCP 1242	ND U	0.98	0.084	1	10/06/04	10/22/04	KWG0415263	
PCP 1248	ND U	0.98	0.017	1	10/06/04	10/22/04	KWG0415263	
PCP 1254	ND U	0.98	0.0084	1	10/06/04	10/22/04	KWG0415263	
PCP 1260	ND U	0.98	0.021	1	10/06/04	10/22/04	KWG0415263	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Heptachloro-m-xylene	94	15-116	10/25/04	Acceptable
Heptachlorobiphenyl	97	10-153	10/25/04	Acceptable

Comments:

---



---

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650

**Surrogate Recovery Summary**  
**Organochlorine Pesticides and Polychlorinated Biphenyls**

Extraction Method: EPA 3520C  
 Analysis Method: 608M

Units: PERCENT  
 Level: Low

Sample Name	Lab Code	Sur1	Sur2
KS-PP04	K2407650-001	55 D	38 D
OS-PP04	K2407650-002	127 D *	26 D
Method Blank	KWG0415263-3	94	97
Lab Control Sample	KWG0415263-1	103	77
Duplicate Lab Control Sample	KWG0415263-2	90	109

## Surrogate Recovery Control Limits (%)

---

1 = Tetrachloro-m-xylene	15-116
2 = Decachlorobiphenyl	10-153

---

Items flagged with an asterisk (\*) indicate values outside control criteria.

Items flagged with a pound (#) indicate the control criteria is not applicable.

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Extracted: 10/06/2004  
 Date Analyzed: 10/25/2004 -  
 10/26/2004

**Lab Control Spike/Duplicate Lab Control Spike Summary  
 Organochlorine Pesticides and Polychlorinated Biphenyls**

Extraction Method: EPA 3520C  
 Analysis Method: 608M

Units: ug/L

Basis: NA

Level: Low

Extraction Lot: KWG0415263

Analyte Name	Lab Control Sample KWG0415263-1			Duplicate Lab Control Sample KWG0415263-2			%Rec Limits	RPD	RPD Limit			
	Lab Control Spike			Duplicate Lab Control Spike								
	Result	Expected	%Rec	Result	Expected	%Rec						
alpha-BHC	0.0965	0.0971	99	0.0915	0.0971	94	34-136	5	30			
beta-BHC	0.0880	0.0971	91	0.0857	0.0971	88	35-144	3	30			
gamma-BHC (Lindane)	0.100	0.0971	103	0.0952	0.0971	98	39-134	5	30			
delta-BHC	0.104	0.0971	107	0.106	0.0971	110	41-141	2	30			
Heptachlor	0.0753	0.0971	78	0.0713	0.0971	73	32-126	6	30			
Irin	0.0929	0.0971	96	0.0874	0.0971	90	28-126	6	30			
Heptachlor Epoxide	0.103	0.0971	107	0.105	0.0971	109	39-139	2	30			
Iosulfan I	0.0849	0.0971	87	0.0860	0.0971	89	12-154	1	30			
Ildrin	0.0901	0.0971	93	0.0954	0.0971	98	44-136	6	30			
DDDE	0.100	0.0971	103	0.0952	0.0971	98	43-136	5	30			
Irin	0.0991	0.0971	102	0.103	0.0971	106	44-138	3	30			
Iosulfan II	0.0848	0.0971	87	0.0864	0.0971	89	19-157	2	30			
DDD	0.116	0.0971	119	0.111	0.0971	115	44-141	4	30			
Irin Aldehyde	0.0830	0.0971	85	0.0834	0.0971	86	39-128	0	30			
Iosulfan Sulfate	0.0934	0.0971	96	0.0952	0.0971	98	46-137	2	30			
DDT	0.0972	0.0971	100	0.108	0.0971	111	52-138	11	30			

Values flagged with an asterisk (\*) indicate values outside control criteria.

Recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: CH2M Hill  
Object: Joint Cannery Outfall -Streams/147323.JC.04.TW  
Sample Matrix: Water

Service Request: K2407650  
Date Extracted: 10/06/2004  
Date Analyzed: 10/22/2004  
Time Analyzed: 05:29

Method Blank Summary  
Organochlorine Pesticides and Polychlorinated Biphenyls

Sample Name: Method Blank File ID: J:\GC09\DATA\102104\_608.B\1021F028.D  
Lab Code: KWG0415263-3 Instrument ID: GC09.i  
Extraction Method: EPA 3520C Level: Low  
Methylation Method: 608M Extraction Lot: KWG0415263

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
S-PP04	K2407650-001	J:\GC09\DATA\102204_608.B\1022F036.D	10/23/04	09:21
S-PP04	K2407650-002	J:\GC09\DATA\102204_608.B\1022F037.D	10/23/04	09:47

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Extracted: 10/06/2004  
 Date Analyzed: 10/25/2004  
 Time Analyzed: 23:09

**Method Blank Summary**  
**Organochlorine Pesticides and Polychlorinated Biphenyls**

Sample Name: Method Blank  
 Lab Code: KWG0415263-3  
 Extraction Method: EPA 3520C  
 Analysis Method: 608M

File ID: J:\GC23\DATA\102504B-608\1025F029.D  
 Instrument ID: GC23  
 Level: Low  
 Extraction Lot: KWG0415263

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG0415263-1	J:\GC23\DATA\102504B-608\1025F030.D	10/25/04	23:35
Duplicate Lab Control Sample	KWG0415263-2	J:\GC23\DATA\102504B-608\1025F031.D	10/26/04	00:02
S-PP04	K2407650-001	J:\GC23\DATA\102504B-608\1025F036.D	10/26/04	02:14
S-PP04	K2407650-002	J:\GC23\DATA\102504B-608\1025F037.D	10/26/04	02:41

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water Service Request: K2407650

**Lab Control Sample/Duplicate Lab Control Sample Summary**  
**Organochlorine Pesticides and Polychlorinated Biphenyls**

Sample Name:	Lab Control Sample	Sample Name:	Duplicate Lab Control Sample
Lab Code:	KWG0415263-1	Lab Code:	KWG0415263-2
File ID:	J:\GC23\DATA\102504B-608\1025F030.D	File ID:	J:\GC23\DATA\102504B-608\1025F031.D
Instrument ID:	GC23	Instrument ID:	GC23
Date Extracted:	10/06/2004	Date Extracted:	10/06/2004
Date Analyzed:	10/25/2004	Date Analyzed:	10/26/2004
Time Analyzed:	23:35	Time Analyzed:	00:02

Extraction Method: EPA 3520C                                  Level: Low  
 Analysis Method: 608M    Extraction Lot: KWG0415263

Use Lab Control Samples apply to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Control Blank	KWG0415263-3	J:\GC09\DATA\102104_608.B\1021F028.D	10/22/04	05:29
S-PP04	K2407650-001	J:\GC09\DATA\102204_608.B\1022F036.D	10/23/04	09:21
S-PP04	K2407650-002	J:\GC09\DATA\102204_608.B\1022F037.D	10/23/04	09:47
Control Blank	KWG0415263-3	J:\GC23\DATA\102504B-608\1025F029.D	10/25/04	23:09
S-PP04	K2407650-001	J:\GC23\DATA\102504B-608\1025F036.D	10/26/04	02:14
S-PP04	K2407650-002	J:\GC23\DATA\102504B-608\1025F037.D	10/26/04	02:41

**Volatile Organic Compounds**  
**EPA Method 624**

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Collected: 09/23/2004  
 Date Received: 09/30/2004

## Volatile Organic Compounds

Sample Name: SKS-PP04 Units: ug/L  
 Lab Code: K2407650-001 Basis: NA  
 Extraction Method: METHOD Level: Low  
 Analysis Method: 624

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloromethane	ND U	5.0	0.31	1	10/07/04	10/07/04	KWG0416904	
Vinyl Chloride	ND U	5.0	0.58	1	10/07/04	10/07/04	KWG0416904	
Bromomethane	ND U	5.0	0.81	1	10/07/04	10/07/04	KWG0416904	
Chloroethane	ND U	5.0	0.46	1	10/07/04	10/07/04	KWG0416904	
Trichlorofluoromethane	ND U	5.0	0.49	1	10/07/04	10/07/04	KWG0416904	
1-Dichloroethene	ND U	5.0	0.48	1	10/07/04	10/07/04	KWG0416904	
Methylene Chloride	ND U	5.0	0.21	1	10/07/04	10/07/04	KWG0416904	
trans-1,2-Dichloroethene	ND U	5.0	0.19	1	10/07/04	10/07/04	KWG0416904	
1-Dichloroethane	ND U	5.0	0.34	1	10/07/04	10/07/04	KWG0416904	
Chloroform	ND U	5.0	0.21	1	10/07/04	10/07/04	KWG0416904	
1,1-Trichloroethane (TCA)	ND U	5.0	0.45	1	10/07/04	10/07/04	KWG0416904	
Carbon Tetrachloride	ND U	5.0	0.38	1	10/07/04	10/07/04	KWG0416904	
Benzene	ND U	5.0	0.27	1	10/07/04	10/07/04	KWG0416904	
2-Dichloroethane (EDC)	ND U	5.0	0.12	1	10/07/04	10/07/04	KWG0416904	
Trichloroethene (TCE)	ND U	5.0	0.46	1	10/07/04	10/07/04	KWG0416904	
2-Dichloropropane	ND U	5.0	0.19	1	10/07/04	10/07/04	KWG0416904	
Bromodichloromethane	ND U	5.0	0.17	1	10/07/04	10/07/04	KWG0416904	
Chloroethyl Vinyl Ether	ND U	10	0.62	1	10/07/04	10/07/04	KWG0416904	
trans-1,3-Dichloropropene	ND U	5.0	0.17	1	10/07/04	10/07/04	KWG0416904	
oluene	0.30 J	5.0	0.25	1	10/07/04	10/07/04	KWG0416904	
is-1,3-Dichloropropene	ND U	5.0	0.17	1	10/07/04	10/07/04	KWG0416904	
1,2-Trichloroethane	ND U	5.0	0.21	1	10/07/04	10/07/04	KWG0416904	
Tetrachloroethene (PCE)	ND U	5.0	0.43	1	10/07/04	10/07/04	KWG0416904	
Bromochloromethane	ND U	5.0	0.15	1	10/07/04	10/07/04	KWG0416904	
Chlorobenzene	ND U	5.0	0.18	1	10/07/04	10/07/04	KWG0416904	
Phenylbenzene	ND U	5.0	0.33	1	10/07/04	10/07/04	KWG0416904	
romoform	ND U	5.0	0.28	1	10/07/04	10/07/04	KWG0416904	
1,2,2-Tetrachloroethane	ND U	5.0	0.25	1	10/07/04	10/07/04	KWG0416904	
3-Dichlorobenzene	ND U	5.0	0.17	1	10/07/04	10/07/04	KWG0416904	
4-Dichlorobenzene	ND U	5.0	0.17	1	10/07/04	10/07/04	KWG0416904	
2-Dichlorobenzene	ND U	5.0	0.19	1	10/07/04	10/07/04	KWG0416904	
crolein	ND U	50	4.3	1	10/07/04	10/07/04	KWG0416904	
Crylonitrile	ND U	10	0.45	1	10/07/04	10/07/04	KWG0416904	*

Comments:

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Collected: 09/23/2004  
 Date Received: 09/30/2004

## Volatile Organic Compounds

Sample Name: SKS-PP04  
 Job Code: K2407650-001

Units: ug/L  
 Basis: NA

See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Bromoethane-d8	112	80-124	10/07/04	Acceptable
-Bromofluorobenzene	100	79-117	10/07/04	Acceptable
Dibromofluoromethane	107	64-132	10/07/04	Acceptable

Comments:

---



---

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Collected: NA  
 Date Received: NA

## Volatile Organic Compounds

Sample Name:	Method Blank	Units:	ug/L
Lab Code:	KWG0415389-5	Basis:	NA
Extraction Method:	METHOD		
Analysis Method:	624	Level:	Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloromethane	ND U	5.0	0.31	1	10/01/04	10/01/04	KWG0415389	
Vinyl Chloride	ND U	5.0	0.58	1	10/01/04	10/01/04	KWG0415389	
Bromomethane	ND U	5.0	0.81	1	10/01/04	10/01/04	KWG0415389	
Chloroethane	ND U	5.0	0.46	1	10/01/04	10/01/04	KWG0415389	
Trichlorofluoromethane	ND U	5.0	0.49	1	10/01/04	10/01/04	KWG0415389	
1,1-Dichloroethene	ND U	5.0	0.48	1	10/01/04	10/01/04	KWG0415389	
Methylene Chloride	ND U	5.0	0.21	1	10/01/04	10/01/04	KWG0415389	
trans-1,2-Dichloroethene	ND U	5.0	0.19	1	10/01/04	10/01/04	KWG0415389	
cis-1,2-Dichloroethane	ND U	5.0	0.34	1	10/01/04	10/01/04	KWG0415389	
Chloroform	ND U	5.0	0.21	1	10/01/04	10/01/04	KWG0415389	
,1,1-Trichloroethane (TCA)	ND U	5.0	0.45	1	10/01/04	10/01/04	KWG0415389	
Carbon Tetrachloride	ND U	5.0	0.38	1	10/01/04	10/01/04	KWG0415389	
Benzene	ND U	5.0	0.27	1	10/01/04	10/01/04	KWG0415389	
,2-Dichloroethane (EDC)	ND U	5.0	0.12	1	10/01/04	10/01/04	KWG0415389	
Trichloroethene (TCE)	ND U	5.0	0.46	1	10/01/04	10/01/04	KWG0415389	
,2-Dichloropropane	ND U	5.0	0.19	1	10/01/04	10/01/04	KWG0415389	
Bromodichloromethane	ND U	5.0	0.17	1	10/01/04	10/01/04	KWG0415389	
-Chloroethyl Vinyl Ether	ND U	10	0.62	1	10/01/04	10/01/04	KWG0415389	
trans-1,3-Dichloropropene	ND U	5.0	0.17	1	10/01/04	10/01/04	KWG0415389	
oluene	ND U	5.0	0.25	1	10/01/04	10/01/04	KWG0415389	
is-1,3-Dichloropropene	ND U	5.0	0.17	1	10/01/04	10/01/04	KWG0415389	
,1,2-Trichloroethane	ND U	5.0	0.21	1	10/01/04	10/01/04	KWG0415389	
etrachloroethene (PCE)	ND U	5.0	0.43	1	10/01/04	10/01/04	KWG0415389	
bromochloromethane	ND U	5.0	0.15	1	10/01/04	10/01/04	KWG0415389	
Florobenzene	ND U	5.0	0.18	1	10/01/04	10/01/04	KWG0415389	
thylbenzene	ND U	5.0	0.33	1	10/01/04	10/01/04	KWG0415389	
romoform	ND U	5.0	0.28	1	10/01/04	10/01/04	KWG0415389	
,1,2,2-Tetrachloroethane	ND U	5.0	0.25	1	10/01/04	10/01/04	KWG0415389	
3-Dichlorobenzene	ND U	5.0	0.17	1	10/01/04	10/01/04	KWG0415389	
4-Dichlorobenzene	ND U	5.0	0.17	1	10/01/04	10/01/04	KWG0415389	
2-Dichlorobenzene	ND U	5.0	0.19	1	10/01/04	10/01/04	KWG0415389	
crolein	ND U	50	4.3	1	10/01/04	10/01/04	KWG0415389	
crylonitrile	ND U	10	0.45	1	10/01/04	10/01/04	KWG0415389	

Comments: \_\_\_\_\_

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: CH2M Hill  
Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
Sample Matrix: Water

Service Request: K2407650  
Date Collected: NA  
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank                          Units: ug/L  
Lab Code: KWG0415389-5                          Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	85	80-124	10/01/04	Acceptable
1-Bromofluorobenzene	79	79-117	10/01/04	Acceptable
Dibromofluoromethane	82	64-132	10/01/04	Acceptable

Comments: \_\_\_\_\_

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: CH2M Hill  
Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
Sample Matrix: Water

Service Request: K2407650

Surrogate Recovery Summary  
Volatile Organic Compounds

Extraction Method: METHOD  
Analysis Method: 624

Units: PERCENT  
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>
SKS-PP04	K2407650-001	112	100	107
COS-PP04	K2407650-002	87	78	*
Method Blank	KWG0415389-5	85	79	82
Method Blank	KWG0416904-3	103	94	100
Batch QC	K2407594-019	89	76	*
Batch QCMS	KWG0415389-i	85	79	82
Batch QCDMS	KWG0415389-2	84	82	84
Lab Control Sample	KWG0415389-3	86	81	83
Lab Control Sample	KWG0416904-1	107	107	112
Duplicate Lab Control Sample	KWG0416904-2	92	91	95

Surrogate Recovery Control Limits (%)

Sur1 = Toluene-d8	80-124
Sur2 = 4-Bromofluorobenzene	79-117
Sur3 = Dibromofluoromethane	64-132

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Extracted: 10/01/2004  
 Date Analyzed: 10/01/2004

**Matrix Spike/Duplicate Matrix Spike Summary**  
**Volatile Organic Compounds**

Sample Name:	Batch QC	Units:	ug/L
Lab Code:	K2407594-019	Basis:	NA
Extraction Method:	METHOD	Level:	Low
Analysis Method:	624	Extraction Lot:	KWG0415389

Analyte Name	Sample Result	Batch QCMS KWG0415389-1			Batch QCDMS KWG0415389-2			%Rec Limits	RPD	RPD Limit
		Matrix Spike	Duplicate Matrix Spike	Result	Expected	%Rec	Result	Expected	%Rec	
1,1-Dichloroethene	ND	30.9	20.0	154 *	31.8	20.0	159 *	60-152	3	30
Benzene	ND	27.8	20.0	139 *	28.9	20.0	145 *	76-132	4	30
Trichloroethene (TCE)	ND	29.1	20.0	145	29.6	20.0	148	37-183	2	30
Toluene	ND	26.9	20.0	134	28.6	20.0	143 *	62-141	6	30
Chlorobenzene	ND	25.0	20.0	125	26.4	20.0	132 *	70-128	5	30
1,2-Dichlorobenzene	ND	25.7	20.0	129	27.0	20.0	135 *	68-129	5	30

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Recent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Extracted: 10/01/2004  
 Date Analyzed: 10/01/2004

**Lab Control Spike Summary**  
**Volatile Organic Compounds**

Extraction Method: METHOD  
 Analysis Method: 624

Units: ug/L  
 Basis: NA  
 Level: Low  
 Extraction Lot: KWG0415389

Lab Control Sample  
 KWG0415389-3  
 Lab Control Spike

Analyte Name	Result	Expected	%Rec	%Rec Limits
Chloromethane	18.6	20.0	93	49-136
Vinyl Chloride	19.3	20.0	96	61-145
Bromomethane	20.9	20.0	105	35-154
Chloroethane	20.5	20.0	103	60-131
Trichlorofluoromethane	19.0	20.0	95	57-138
1,1-Dichloroethene	21.3	20.0	106	61-141
Methylene Chloride	19.9	20.0	100	65-126
trans-1,2-Dichloroethene	20.0	20.0	100	65-130
1,1-Dichloroethane	19.1	20.0	95	65-127
Chloroform	18.4	20.0	92	67-131
1,1,1-Trichloroethane (TCA)	20.1	20.0	100	61-143
Carbon Tetrachloride	20.3	20.0	101	70-140
Benzene	19.5	20.0	97	75-127
1,2-Dichloroethane (EDC)	19.8	20.0	99	64-132
Trichloroethene (TCE)	20.1	20.0	100	71-157
1,2-Dichloropropane	18.7	20.0	94	72-123
Bromodichloromethane	18.7	20.0	94	70-125
$\gamma$ -Chloroethyl Vinyl Ether	26.9	20.0	134	10-185
trans-1,3-Dichloropropene	17.2	20.0	86	66-125
Toluene	19.5	20.0	97	71-132
cis-1,3-Dichloropropene	18.4	20.0	92	72-134
,1,2-Trichloroethane	19.8	20.0	99	72-126
Tetrachloroethene (PCE)	20.2	20.0	101	69-131
Dibromochloromethane	18.9	20.0	94	70-126
Chlorobenzene	18.1	20.0	91	75-122
Methylbenzene	19.6	20.0	98	75-133
Iodoform	20.4	20.0	102	72-133
,1,2,2-Tetrachloroethane	19.3	20.0	96	59-133
,3-Dichlorobenzene	20.0	20.0	100	73-129
,4-Dichlorobenzene	19.6	20.0	98	74-125
,2-Dichlorobenzene	19.8	20.0	99	71-129
Crolein	70.6	100	71	10-161
Crylonitrile	20.8	20.0	104	67-115

Results flagged with an asterisk (\*) indicate values outside control criteria.

Recent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Extracted: 10/07/2004  
 Date Analyzed: 10/07/2004

**Lab Control Spike/Duplicate Lab Control Spike Summary  
 Volatile Organic Compounds**

Extraction Method: METHOD  
 Analysis Method: 624

Units: ug/L  
 Basis: NA  
 Level: Low  
 Extraction Lot: KWG0416904

Analyte Name	Lab Control Sample KWG0416904-1 Lab Control Spike			Duplicate Lab Control Sample KWG0416904-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
	26.8	20.0	134	23.0	20.0	115	49-136	15	30
Vinyl Chloride	25.6	20.0	128	20.9	20.0	104	61-145	20	30
Bromomethane	26.7	20.0	133	23.8	20.0	119	35-154	11	30
Chloroethane	25.8	20.0	129	21.0	20.0	105	60-131	21	30
Trichlorofluoromethane	21.0	20.0	105	18.3	20.0	91	57-138	14	30
1,1-Dichloroethene	24.6	20.0	123	20.4	20.0	102	61-141	19	30
Methylene Chloride	21.2	20.0	106	18.2	20.0	91	65-126	15	30
trans-1,2-Dichloroethene	23.6	20.0	118	19.9	20.0	100	65-130	17	30
1,1-Dichloroethane	22.7	20.0	114	19.7	20.0	98	65-127	14	30
Chloroform	22.8	20.0	114	19.6	20.0	98	67-131	15	30
1,1,1-Trichloroethane (TCA)	22.7	20.0	113	19.2	20.0	96	61-143	17	30
Carbon Tetrachloride	23.2	20.0	116	19.8	20.0	99	70-140	16	30
Benzene	24.0	20.0	120	20.2	20.0	101	75-127	17	30
1,2-Dichloroethane (EDC)	22.6	20.0	113	19.6	20.0	98	64-132	14	30
Trichloroethene (TCE)	23.5	20.0	118	20.9	20.0	105	71-157	12	30
1,2-Dichloropropane	22.9	20.0	114	19.6	20.0	98	72-123	16	30
Bromodichloromethane	23.3	20.0	117	20.1	20.0	101	70-125	15	30
1-Chloroethyl Vinyl Ether	15.8	20.0	79	11.5	20.0	58	10-185	32 *	30
trans-1,3-Dichloropropene	21.2	20.0	106	18.7	20.0	93	66-125	12	30
Toluene	23.4	20.0	117	20.1	20.0	100	71-132	15	30
is-1,3-Dichloropropene	22.0	20.0	110	19.4	20.0	97	72-134	12	30
,1,2-Trichloroethane	22.1	20.0	110	18.3	20.0	91	72-126	19	30
Tetrachloroethene (PCE)	19.5	20.0	98	16.6	20.0	83	69-131	16	30
Dibromochloromethane	22.9	20.0	114	19.6	20.0	98	70-126	15	30
Chlorobenzene	22.8	20.0	114	19.2	20.0	96	75-122	17	30
Methylbenzene	23.7	20.0	118	19.6	20.0	98	75-133	19	30
Trromoform	23.8	20.0	119	19.8	20.0	99	72-133	18	30
,1,2,2-Tetrachloroethane	23.6	20.0	118	18.9	20.0	95	72-133	22	30
,3-Dichlorobenzene	23.8	20.0	119	19.4	20.0	97	59-133	22	30
,4-Dichlorobenzene	24.4	20.0	122	19.6	20.0	98	73-129	20	30
,2-Dichlorobenzene	23.6	20.0	118	19.1	20.0	95	74-125	22	30
crolein	87.8	100	88	76.2	100	76	71-129	21	30
crylonitrile	23.4	20.0	117 *	19.1	20.0	96	10-161	14	30

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Extracted: 10/01/2004  
 Date Analyzed: 10/01/2004

**Matrix Spike/Duplicate Matrix Spike Summary**  
**Volatile Organic Compounds**

Sample Name:	Batch QC	Units:	ug/L
Lab Code:	K2407594-019	Basis:	NA
Extraction Method:	METHOD	Level:	Low
Analysis Method:	624	Extraction Lot:	KWG0415389

Analyte Name	Sample Result	Batch QCMS KWG0415389-1 Matrix Spike			Batch QCDMS KWG0415389-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,1-Dichloroethene	ND	30.9	20.0	154 *	31.8	20.0	159 *	60-152	3	30
Benzene	ND	27.8	20.0	139 *	28.9	20.0	145 *	76-132	4	30
Trichloroethene (TCE)	ND	29.1	20.0	145	29.6	20.0	148	37-183	2	30
Toluene	ND	26.9	20.0	134	28.6	20.0	143 *	62-141	6	30
Chlorobenzene	ND	25.0	20.0	125	26.4	20.0	132 *	70-128	5	30
1,2-Dichlorobenzene	ND	25.7	20.0	129	27.0	20.0	135 *	68-129	5	30

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** CH2M Hill  
**Project:** Joint Cannery Outfall -Streams/147323.JC.04.TW  
**Sample Matrix:** Water

**Service Request:** K2407650  
**Date Extracted:** 10/01/2004  
**Date Analyzed:** 10/01/2004

**Lab Control Spike Summary**  
**Volatile Organic Compounds**

**Extraction Method:** METHOD  
**Analysis Method:** 624

**Units:** ug/L  
**Basis:** NA  
**Level:** Low  
**Extraction Lot:** KWG0415389

Lab Control Sample  
KWG0415389-3  
Lab Control Spike

Analyte Name	Result	Expected	%Rec	%Rec Limits
Chloromethane	18.6	20.0	93	49-136
Vinyl Chloride	19.3	20.0	96	61-145
Bromomethane	20.9	20.0	105	35-154
Chloroethane	20.5	20.0	103	60-131
Trichlorofluoromethane	19.0	20.0	95	57-138
1,1-Dichloroethene	21.3	20.0	106	61-141
Methylene Chloride	19.9	20.0	100	65-126
trans-1,2-Dichloroethene	20.0	20.0	100	65-130
1,1-Dichloroethane	19.1	20.0	95	65-127
Chloroform	18.4	20.0	92	67-131
1,1,1-Trichloroethane (TCA)	20.1	20.0	100	61-143
Carbon Tetrachloride	20.3	20.0	101	70-140
Benzene	19.5	20.0	97	75-127
1,2-Dichloroethane (EDC)	19.8	20.0	99	64-132
Trichloroethene (TCE)	20.1	20.0	100	71-157
1,2-Dichloropropane	18.7	20.0	94	72-123
Bromodichloromethane	18.7	20.0	94	70-125
2-Chloroethyl Vinyl Ether	26.9	20.0	134	10-185
trans-1,3-Dichloropropene	17.2	20.0	86	66-125
Toluene	19.5	20.0	97	71-132
cis-1,3-Dichloropropene	18.4	20.0	92	72-134
1,1,2-Trichloroethane	19.8	20.0	99	72-126
Tetrachloroethene (PCE)	20.2	20.0	101	69-131
Dibromochloromethane	18.9	20.0	94	70-126
Chlorobenzene	18.1	20.0	91	75-122
Ethylbenzene	19.6	20.0	98	75-133
Bromoform	20.4	20.0	102	72-133
,1,2,2-Tetrachloroethane	19.3	20.0	96	59-133
,3-Dichlorobenzene	20.0	20.0	100	73-129
,4-Dichlorobenzene	19.6	20.0	98	74-125
,2-Dichlorobenzene	19.8	20.0	99	71-129
Acrolein	70.6	100	71	10-161
Acrylonitrile	20.8	20.0	104	67-115

Results flagged with an asterisk (\*) indicate values outside control criteria.

Recent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** CH2M Hill  
**Project:** Joint Cannery Outfall -Streams/147323.JC.04.TW  
**Sample Matrix:** Water

**Service Request:** K2407650  
**Date Extracted:** 10/07/2004  
**Date Analyzed:** 10/07/2004

**Lab Control Spike/Duplicate Lab Control Spike Summary**  
**Volatile Organic Compounds**

**Extraction Method:** METHOD  
**Analysis Method:** 624

**Units:** ug/L  
**Basis:** NA  
**Level:** Low  
**Extraction Lot:** KWG0416904

Analyte Name	Lab Control Sample KWG0416904-1			Duplicate Lab Control Sample KWG0416904-2			%Rec Limits	RPD	RPD Limit			
	Lab Control Spike			Duplicate Lab Control Spike								
	Result	Expected	%Rec	Result	Expected	%Rec						
Chloromethane	26.8	20.0	134	23.0	20.0	115	49-136	15	30			
Vinyl Chloride	25.6	20.0	128	20.9	20.0	104	61-145	20	30			
Bromomethane	26.7	20.0	133	23.8	20.0	119	35-154	11	30			
Chloroethane	25.8	20.0	129	21.0	20.0	105	60-131	21	30			
Trichlorofluoromethane	21.0	20.0	105	18.3	20.0	91	57-138	14	30			
1,1-Dichloroethene	24.6	20.0	123	20.4	20.0	102	61-141	19	30			
Methylene Chloride	21.2	20.0	106	18.2	20.0	91	65-126	15	30			
trans-1,2-Dichloroethene	23.6	20.0	118	19.9	20.0	100	65-130	17	30			
1,1-Dichloroethane	22.7	20.0	114	19.7	20.0	98	65-127	14	30			
Chloroform	22.8	20.0	114	19.6	20.0	98	67-131	15	30			
1,1,1-Trichloroethane (TCA)	22.7	20.0	113	19.2	20.0	96	61-143	17	30			
Carbon Tetrachloride	23.2	20.0	116	19.8	20.0	99	70-140	16	30			
Benzene	24.0	20.0	120	20.2	20.0	101	75-127	17	30			
1,2-Dichloroethane (EDC)	22.6	20.0	113	19.6	20.0	98	64-132	14	30			
Trichloroethene (TCE)	23.5	20.0	118	20.9	20.0	105	71-157	12	30			
1,2-Dichloropropane	22.9	20.0	114	19.6	20.0	98	72-123	16	30			
Bromodichloromethane	23.3	20.0	117	20.1	20.0	101	70-125	15	30			
1-Chloroethyl Vinyl Ether	15.8	20.0	79	11.5	20.0	58	10-185	32 *	30			
trans-1,3-Dichloropropene	21.2	20.0	106	18.7	20.0	93	66-125	12	30			
Toluene	23.4	20.0	117	20.1	20.0	100	71-132	15	30			
cis-1,3-Dichloropropene	22.0	20.0	110	19.4	20.0	97	72-134	12	30			
1,1,2-Trichloroethane	22.1	20.0	110	18.3	20.0	91	72-126	19	30			
Tetrachloroethene (PCE)	19.5	20.0	98	16.6	20.0	83	69-131	16	30			
Dibromochloromethane	22.9	20.0	114	19.6	20.0	98	70-126	15	30			
Chlorobenzene	22.8	20.0	114	19.2	20.0	96	75-122	17	30			
ethylbenzene	23.7	20.0	118	19.6	20.0	98	75-133	19	30			
Bromoform	23.8	20.0	119	19.8	20.0	99	72-133	18	30			
1,2,2-Tetrachloroethane	23.6	20.0	118	18.9	20.0	95	59-133	22	30			
3-Dichlorobenzene	23.8	20.0	119	19.4	20.0	97	73-129	20	30			
4-Dichlorobenzene	24.4	20.0	122	19.6	20.0	98	74-125	22	30			
,2-Dichlorobenzene	23.6	20.0	118	19.1	20.0	95	71-129	21	30			
crolein	87.8	100	88	76.2	100	76	10-161	14	30			
acrylonitrile	23.4	20.0	117 *	19.1	20.0	96	67-115	20	30			

Results flagged with an asterisk (\*) indicate values outside control criteria.

Recent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**Semi-Volatile Organic Compounds by GC/MS  
EPA Method 625**

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Collected: 09/23/2004  
 Date Received: 09/30/2004

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: SKS-PP04 Units: ug/L  
 Lab Code: K2407650-001 Basis: NA  
 Extraction Method: EPA 3520C Level: Low  
 Analysis Method: 625

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND U	50	0.96	1	10/06/04	10/13/04	KWG0415309	*
Bis(2-chloroethyl) Ether	ND U	20	0.67	1	10/06/04	10/13/04	KWG0415309	*
Phenol	220	20	0.65	1	10/06/04	10/13/04	KWG0415309	*
2-Chlorophenol	ND U	20	0.63	1	10/06/04	10/13/04	KWG0415309	*
1,3-Dichlorobenzene	ND U	20	0.71	1	10/06/04	10/13/04	KWG0415309	*
1,4-Dichlorobenzene	ND U	20	0.64	1	10/06/04	10/13/04	KWG0415309	*
1,2-Dichlorobenzene	ND U	20	0.87	1	10/06/04	10/13/04	KWG0415309	*
Bis(2-chloroisopropyl) Ether	ND U	20	0.63	1	10/06/04	10/13/04	KWG0415309	*
Hexachloroethane	ND U	20	0.58	1	10/06/04	10/13/04	KWG0415309	*
N-Nitrosodi-n-propylamine	ND U	20	1.0	1	10/06/04	10/13/04	KWG0415309	*
Nitrobenzene	ND U	20	1.2	1	10/06/04	10/13/04	KWG0415309	*
Sophorone	ND U	20	0.50	1	10/06/04	10/13/04	KWG0415309	*
2-Nitrophenol	ND U	20	0.75	1	10/06/04	10/13/04	KWG0415309	*
2,4-Dimethylphenol	ND U	20	0.53	1	10/06/04	10/13/04	KWG0415309	*
Bis(2-chlorooxy)methane	ND U	20	0.56	1	10/06/04	10/13/04	KWG0415309	*
2,4-Dichlorophenol	ND U	20	0.60	1	10/06/04	10/13/04	KWG0415309	*
2,4,Trichlorobenzene	ND U	20	0.71	1	10/06/04	10/13/04	KWG0415309	*
Naphthalene	ND U	20	0.73	1	10/06/04	10/13/04	KWG0415309	*
Hexachlorobutadiene	ND U	20	0.59	1	10/06/04	10/13/04	KWG0415309	*
-Chloro-3-methylphenol	ND U	20	0.98	1	10/06/04	10/13/04	KWG0415309	*
Hexachlorocyclopentadiene	ND U	20	2.5	1	10/06/04	10/13/04	KWG0415309	*
,4,6-Trichlorophenol	ND U	20	0.41	1	10/06/04	10/13/04	KWG0415309	*
-Chloronaphthalene	ND U	20	0.58	1	10/06/04	10/13/04	KWG0415309	*
Cyclophosphylene	ND U	20	0.48	1	10/06/04	10/13/04	KWG0415309	*
Dimethyl Phthalate	ND U	20	0.51	1	10/06/04	10/13/04	KWG0415309	*
,6-Dinitrotoluene	ND U	20	0.70	1	10/06/04	10/13/04	KWG0415309	*
Cyclophthylene	ND U	20	0.57	1	10/06/04	10/13/04	KWG0415309	*
,4-Dinitrophenol	ND U	50	4.5	1	10/06/04	10/13/04	KWG0415309	*
-Nitrophenol	ND U	50	3.9	1	10/06/04	10/13/04	KWG0415309	*
,4-Dinitrotoluene	ND U	20	0.55	1	10/06/04	10/13/04	KWG0415309	*
luorene	ND U	20	0.65	1	10/06/04	10/13/04	KWG0415309	*
Chlorophenyl Phenyl Ether	ND U	20	0.56	1	10/06/04	10/13/04	KWG0415309	*
Ethyl Phthalate	ND U	20	0.58	1	10/06/04	10/13/04	KWG0415309	*
Methyl-4,6-dinitrophenol	ND U	50	4.3	1	10/06/04	10/13/04	KWG0415309	*

Comments: \_\_\_\_\_

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Collected: 09/23/2004  
 Date Received: 09/30/2004

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: SKS-PP04 Units: ug/L  
 Lab Code: K2407650-001 Basis: NA  
 Extraction Method: EPA 3520C Level: Low  
 Analysis Method: 625

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodiphenylamine	ND U	20	1.1	1	10/06/04	10/13/04	KWG0415309	*
,2-Diphenylhydrazine†	ND U	20	1.1	1	10/06/04	10/13/04	KWG0415309	*
-Bromophenyl Phenyl Ether	ND U	20	0.55	1	10/06/04	10/13/04	KWG0415309	*
Hexachlorobenzene	ND U	20	1.3	1	10/06/04	10/13/04	KWG0415309	*
pentachlorophenol	ND U	50	4.9	1	10/06/04	10/13/04	KWG0415309	*
phenanthrene	ND U	20	0.97	1	10/06/04	10/13/04	KWG0415309	*
anthracene	ND U	20	1.3	1	10/06/04	10/13/04	KWG0415309	*
Di-n-butyl Phthalate	ND U	20	0.73	1	10/06/04	10/13/04	KWG0415309	*
Fluoranthene	ND U	20	1.4	1	10/06/04	10/13/04	KWG0415309	*
Benzidine	ND U	100	18	1	10/06/04	10/13/04	KWG0415309	*
Yrene	ND U	20	1.5	1	10/06/04	10/13/04	KWG0415309	*
Butyl Benzyl Phthalate	ND U	20	0.94	1	10/06/04	10/13/04	KWG0415309	*
,3'-Dichlorobenzidine	ND U	50	0.54	1	10/06/04	10/13/04	KWG0415309	*
Benz(a)anthracene	ND U	20	1.2	1	10/06/04	10/13/04	KWG0415309	*
Chrysene	ND U	20	1.6	1	10/06/04	10/13/04	KWG0415309	*
Bis(2-ethylhexyl) Phthalate	ND U	20	3.8	1	10/06/04	10/13/04	KWG0415309	*
Di-n-octyl Phthalate	ND U	20	1.3	1	10/06/04	10/13/04	KWG0415309	*
benzo(b)fluoranthene	ND U	20	1.2	1	10/06/04	10/13/04	KWG0415309	*
benzo(k)fluoranthene	ND U	20	1.7	1	10/06/04	10/13/04	KWG0415309	*
benzo(a)pyrene	ND U	20	1.4	1	10/06/04	10/13/04	KWG0415309	*
ndeno(1,2,3-cd)pyrene	ND U	20	1.4	1	10/06/04	10/13/04	KWG0415309	*
ibenz(a,h)anthracene	ND U	20	1.6	1	10/06/04	10/13/04	KWG0415309	*
enzo(g,h,i)perylene	ND U	20	1.7	1	10/06/04	10/13/04	KWG0415309	*

See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
-Fluorophenol	74	27-107	10/13/04	Acceptable
henol-d6	81	22-126	10/13/04	Acceptable
itrobenzene-d5	87	37-119	10/13/04	Acceptable
-Fluorobiphenyl	84	27-119	10/13/04	Acceptable
,4,6-Tribromophenol	84	42-127	10/13/04	Acceptable
erphenyl-d14	51	10-174	10/13/04	Acceptable

Comments:

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Collected: NA  
 Date Received: NA

## Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	Units:	ug/L
Lab Code:	KWG0415309-4	Basis:	NA
Extraction Method:	EPA 3520C		
Analysis Method:	625	Level:	Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1-Nitrosodimethylamine	ND U	24	0.48	1	10/06/04	10/08/04	KWG0415309	
Bis(2-chloroethyl) Ether	ND U	9.6	0.34	1	10/06/04	10/08/04	KWG0415309	
Phenol	ND U	9.6	0.33	1	10/06/04	10/08/04	KWG0415309	
-Chlorophenol	ND U	9.6	0.32	1	10/06/04	10/08/04	KWG0415309	
,3-Dichlorobenzene	ND U	9.6	0.36	1	10/06/04	10/08/04	KWG0415309	
,4-Dichlorobenzene	ND U	9.6	0.32	1	10/06/04	10/08/04	KWG0415309	
,2-Dichlorobenzene	ND U	9.6	0.44	1	10/06/04	10/08/04	KWG0415309	
is(2-chloroisopropyl) Ether	ND U	9.6	0.32	1	10/06/04	10/08/04	KWG0415309	
hexachloroethane	ND U	9.6	0.29	1	10/06/04	10/08/04	KWG0415309	
1-Nitrosodi-n-propylamine	ND U	9.6	0.50	1	10/06/04	10/08/04	KWG0415309	
nitrobenzene	ND U	9.6	0.57	1	10/06/04	10/08/04	KWG0415309	
isoporphorone	ND U	9.6	0.25	1	10/06/04	10/08/04	KWG0415309	
Nitrophenol	ND U	9.6	0.38	1	10/06/04	10/08/04	KWG0415309	
,4-Dimethylphenol	ND U	9.6	0.27	1	10/06/04	10/08/04	KWG0415309	
is(2-chloroethoxy)methane	ND U	9.6	0.28	1	10/06/04	10/08/04	KWG0415309	
4-Dichlorophenol	ND U	9.6	0.30	1	10/06/04	10/08/04	KWG0415309	
2,4-Trichlorobenzene	ND U	9.6	0.36	1	10/06/04	10/08/04	KWG0415309	
aphthalene	ND U	9.6	0.37	1	10/06/04	10/08/04	KWG0415309	
hexachlorobutadiene	ND U	9.6	0.30	1	10/06/04	10/08/04	KWG0415309	
Chloro-3-methylphenol	ND U	9.6	0.49	1	10/06/04	10/08/04	KWG0415309	
hexachlorocyclopentadiene	ND U	9.6	1.3	1	10/06/04	10/08/04	KWG0415309	
4,6-Trichlorophenol	ND U	9.6	0.21	1	10/06/04	10/08/04	KWG0415309	
Chloronaphthalene	ND U	9.6	0.29	1	10/06/04	10/08/04	KWG0415309	
cyanaphthylene	ND U	9.6	0.24	1	10/06/04	10/08/04	KWG0415309	
dimethyl Phthalate	ND U	9.6	0.26	1	10/06/04	10/08/04	KWG0415309	
6-Dinitrotoluene	ND U	9.6	0.35	1	10/06/04	10/08/04	KWG0415309	
cyanaphthene	ND U	9.6	0.29	1	10/06/04	10/08/04	KWG0415309	
4-Dinitrophenol	ND U	24	2.3	1	10/06/04	10/08/04	KWG0415309	
Nitrophenol	ND U	24	2.0	1	10/06/04	10/08/04	KWG0415309	
4-Dinitrotoluene	ND U	9.6	0.28	1	10/06/04	10/08/04	KWG0415309	
urene	ND U	9.6	0.33	1	10/06/04	10/08/04	KWG0415309	
Chlorophenyl Phenyl Ether	ND U	9.6	0.28	1	10/06/04	10/08/04	KWG0415309	
ethyl Phthalate	ND U	9.6	0.29	1	10/06/04	10/08/04	KWG0415309	
Methyl-4,6-dinitrophenol	ND U	24	2.2	1	10/06/04	10/08/04	KWG0415309	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Collected: NA  
 Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	Units:	ug/L
Lab Code:	KWG0415309-4	Basis:	NA
Extraction Method:	EPA 3520C		
Analysis Method:	625	Level:	Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
4-Nitrosodiphenylamine	ND U	9.6	0.53	1	10/06/04	10/08/04	KWG0415309	
,2-Diphenylhydrazine†	ND U	9.6	0.51	1	10/06/04	10/08/04	KWG0415309	
-Bromophenyl Phenyl Ether	ND U	9.6	0.28	1	10/06/04	10/08/04	KWG0415309	
Iexachlorobenzene	ND U	9.6	0.63	1	10/06/04	10/08/04	KWG0415309	
'entachlorophenol	ND U	24	2.5	1	10/06/04	10/08/04	KWG0415309	
henanthrene	ND U	9.6	0.49	1	10/06/04	10/08/04	KWG0415309	
nthracene	ND U	9.6	0.62	1	10/06/04	10/08/04	KWG0415309	
i-n-butyl Phthalate	ND U	9.6	0.37	1	10/06/04	10/08/04	KWG0415309	
luoranthene	ND U	9.6	0.66	1	10/06/04	10/08/04	KWG0415309	
enzidine	ND U	48	8.8	1	10/06/04	10/08/04	KWG0415309	
ryrene	ND U	9.6	0.74	1	10/06/04	10/08/04	KWG0415309	
utyl Benzyl Phthalate	ND U	9.6	0.47	1	10/06/04	10/08/04	KWG0415309	
,3'-Dichlorobenzidine	ND U	24	0.27	1	10/06/04	10/08/04	KWG0415309	
enz(a)anthracene	ND U	9.6	0.60	1	10/06/04	10/08/04	KWG0415309	
hrysene	ND U	9.6	0.79	1	10/06/04	10/08/04	KWG0415309	
is(2-ethylhexyl) Phthalate	ND U	9.6	1.9	1	10/06/04	10/08/04	KWG0415309	
i-n-octyl Phthalate	ND U	9.6	0.63	1	10/06/04	10/08/04	KWG0415309	
enzo(b)fluoranthene	ND U	9.6	0.59	1	10/06/04	10/08/04	KWG0415309	
enzo(k)fluoranthene	ND U	9.6	0.83	1	10/06/04	10/08/04	KWG0415309	
enzo(a)pyrene	ND U	9.6	0.66	1	10/06/04	10/08/04	KWG0415309	
deno(1,2,3-cd)pyrene	ND U	9.6	0.69	1	10/06/04	10/08/04	KWG0415309	
ibenzo(a,h)anthracene	ND U	9.6	0.76	1	10/06/04	10/08/04	KWG0415309	
enzo(g,h,i)perylene	ND U	9.6	0.82	1	10/06/04	10/08/04	KWG0415309	

rrrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorophenol	71	27-107	10/08/04	Acceptable
enol-d6	72	22-126	10/08/04	Acceptable
trobenzene-d5	73	37-119	10/08/04	Acceptable
Fluorobiphenyl	79	27-119	10/08/04	Acceptable
4,6-Tribromophenol	86	42-127	10/08/04	Acceptable
rophenyl-d14	98	10-174	10/08/04	Acceptable

mments:

---

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Extracted: 10/06/2004  
 Date Analyzed: 10/08/2004

**Matrix Spike/Duplicate Matrix Spike Summary**  
**Semi-Volatile Organic Compounds by GC/MS**

Sample Name:	Batch QC	Units:	ug/L
Lab Code:	K2407744-001	Basis:	NA
Extraction Method:	EPA 3520C	Level:	Low
Analysis Method:	625	Extraction Lot:	KWG0415309

Analyte Name	Sample Result	Batch QCMS			Batch QCDMS			%Rec Limits	RPD	RPD Limit			
		KGW0415309-1			KGW0415309-2								
		Matrix Spike			Duplicate Matrix Spike								
		Result	Expected	%Rec	Result	Expected	%Rec						
Phenol	ND	84.1	118	72	87.1	118	74	17-126	3	30			
-Chlorophenol	ND	82.2	118	70	91.5	118	78	31-117	11	30			
,4-Dichlorobenzene	ND	68.9	118	59	77.2	118	66	34-97	11	30			
β-Nitrosodi-n-propylamine	ND	91.1	118	77	97.2	118	83	32-139	7	30			
,2,4-Trichlorobenzene	ND	75.4	118	64	87.4	118	74	10-167	15	30			
-Chloro-3-methylphenol	ND	97.1	118	83	106	118	90	10-158	9	30			
cyclohexaphthene	ND	93.6	118	80	102	118	86	34-118	8	30			
-Nitrophenol	ND	101	118	86	107	118	91	28-134	6	30			
,4-Dinitrotoluene	ND	105	118	89	109	118	93	34-143	4	30			
entachlorophenol	ND	102	118	86	106	118	90	37-132	4	30			
yrene	ND	97.3	118	83	96.7	118	82	10-136	1	30			

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Extracted: 10/06/2004  
 Date Analyzed: 10/08/2004

**Lab Control Spike Summary**  
**Semi-Volatile Organic Compounds by GC/MS**

Extraction Method: EPA 3520C  
 Analysis Method: 625

Units: ug/L  
 Basis: NA  
 Level: Low  
 Extraction Lot: KWG0415309

Lab Control Sample  
 KWG0415309-3  
 Lab Control Spike

Analyte Name	Result	Expected	%Rec	%Rec Limits
N-Nitrosodimethylamine	75.8	95.2	80	51-112
Bis(2-chloroethyl) Ether	77.5	95.2	81	56-101
Phenol	79.3	95.2	83	48-101
1-Chlorophenol	83.7	95.2	88	60-100
,3-Dichlorobenzene	78.5	95.2	82	56-94
,4-Dichlorobenzene	77.4	95.2	81	55-91
,2-Dichlorobenzene	81.0	95.2	85	57-96
Bis(2-chloroisopropyl) Ether	65.4	95.2	69	50-109
Iexachloroethane	77.8	95.2	82	52-98
L-Nitrosodi-n-propylamine	87.8	95.2	92	62-113
Nitrobenzene	77.1	95.2	81	62-103
sophorone	84.2	95.2	88	74-111
-Nitrophenol	87.6	95.2	92	66-103
,4-Dimethylphenol	82.6	95.2	87	51-98
is(2-chloroethoxy)methane	76.2	95.2	80	65-97
,4-Dichlorophenol	87.8	95.2	92	65-100
,2,4-Trichlorobenzene	78.0	95.2	82	58-97
Phthalene	80.2	95.2	84	64-97
Iexachlorobutadiene	76.4	95.2	80	53-98
-Chloro-3-methylphenol	92.9	95.2	98	50-120
Iexachlorocyclopentadiene	18.5	95.2	19	10-64
4,6-Trichlorophenol	91.1	95.2	96	67-106
-Chloronaphthalene	83.9	95.2	88	61-104
cenaphthylene	91.4	95.2	96	73-108
imethyl Phthalate	92.8	95.2	97	54-123
6-Dinitrotoluene	96.5	95.2	101	78-112
cenaphthene	86.5	95.2	91	70-104
4-Dinitrophenol	89.0	95.2	94	37-129
Nitrophenol	88.4	95.2	93	49-123
4-Dinitrotoluene	98.7	95.2	104	77-121
uorene	89.1	95.2	94	66-115
Chlorophenyl Phenyl Ether	89.0	95.2	93	68-108
ethyl Phthalate	93.1	95.2	98	24-152
Methyl-4,6-dinitrophenol	92.4	95.2	97	49-120
Nitrosodiphenylamine	97.4	95.2	102	71-114
2-Diphenylhydrazine	95.5	95.2	100	70-111

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client: CH2M Hill  
 Project: Joint Cannery Outfall -Streams/147323.JC.04.TW  
 Sample Matrix: Water

Service Request: K2407650  
 Date Extracted: 10/06/2004  
 Date Analyzed: 10/08/2004

**Lab Control Spike Summary**  
**Semi-Volatile Organic Compounds by GC/MS**

Extraction Method: EPA 3520C  
 Analysis Method: 625

Units: ug/L  
 Basis: NA  
 Level: Low  
 Extraction Lot: KWG0415309

Lab Control Sample  
 KWG0415309-3  
 Lab Control Spike

Analyst Name	Result	Expected	%Rec	%Rec Limits
Bromophenyl Phenyl Ether	99.3	95.2	104	69-110
hexachlorobenzene	98.9	95.2	104	68-116
entachlorophenol	92.6	95.2	97	50-122
henanthrene	89.6	95.2	94	70-110
nthracene	93.7	95.2	98	71-110
i-n-butyl Phthalate	93.3	95.2	98	62-119
luoranthene	92.2	95.2	97	62-116
enzidine	130	190	68	10-229
yrene	89.1	95.2	94	65-113
utyl Benzyl Phthalate	90.2	95.2	95	61-125
3'-Dichlorobenzidine	94.8	95.2	100	49-109
enz(a)anthracene	93.2	95.2	98	75-108
hrysene	96.9	95.2	102	73-113
is(2-ethylhexyl) Phthalate	94.5	95.2	99	67-119
i-n-octyl Phthalate	92.3	95.2	97	58-131
enzo(b)fluoranthene	93.1	95.2	98	74-112
enzo(k)fluoranthene	91.2	95.2	96	73-124
enzo(a)pyrene	94.5	95.2	99	73-108
deno(1,2,3-cd)pyrene	93.0	95.2	98	55-122
ibenzo(a,h)anthracene	99.2	95.2	104	69-117
enzo(g,h,i)perylene	97.4	95.2	102	60-118

ults flagged with an asterisk (\*) indicate values outside control criteria.

cent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.